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Telecare Feasibility Study

Feasibility study for the provision of universal telecare services for the over 75s

August 2017
FINAL

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1 Executive Summary

1.1 Introduction

The strategic and operational framework for the development and delivery of telehealth and telecare in Scotland is set out in the National Technology Enabled Care (TEC) Strategic Action Plan[1] published in August 2016 which builds on the 2012 - 2016 Telehealth and Telecare Delivery plan. The Joint Improvement Team (JIT) had responsibility for the plan until 31st December 2015 with the transfer of JIT activities to Healthcare Improvement Scotland (HIS). The policy responsibility is now with Technology Enabled Care (TEC) Division in Scottish Government.

In March 2014 the JIT undertook a review of progress against the telehealth and telecare delivery plan and this led to the development and launch of a three-year £30 million Scotland-wide TEC Programme. Whilst this has provided significant funding for local development, variation still exists across areas and adoption of telecare as a routine response to facilitate early discharge from hospital; prevent admission; and support people with conditions such as dementia to maximise their independence and provide support to carers remains fragmented across the Local Authority and Integrated Joint Boards (IJB) landscape. There are also opportunities to integrate Telehealth and Telecare solutions to support better person-centred care.

As a response to addressing the variation of telecare provision, the Scottish Government's Health and Social Care Management Board, and COSLA's Health and Wellbeing Executive Committee agreed that a feasibility study should be undertaken to examine a national approach to the delivery of telecare services.

The outcome will be used:

- by Scottish Government and COSLA in considering policy development and further investment in the shift to more preventative services, to support health and social care integration;
- by local health & social care partnerships and housing associations to understand any lessons learned in terms of implementing this shift locally; and
- by Scottish Government and local partnerships, COSLA and the Scottish Local Government Partnership to understand the most cost effective models, based on the cost-benefit analysis to support business planning.

The study was undertaken between November 2016 and March 2017. A key aspect of the study was stakeholder engagement. This has included: working sessions with the Project Steering Group Local Authority telecare leads; individual interviews with a range of operational and strategic stakeholders from Local Authorities; IJBs; Convention of Scottish Local Authorities (COSLA); NHS Scotland; Scottish Government; Social Work Scotland and Association of Local Authority Chief Housing Officers (ALACHO); and the issuing of a survey to Local Authorities in order to gather information about existing telecare services and views on applying a universal approach. A significant amount of desk based research was also undertaken to gather evidence in relation to telecare costs and benefits.

1.2 Summary Findings

The study concludes the following:

Context

- The past few decades have seen significant improvements in life expectancy. The number of people aged 75 and over in Scotland is projected to increase by around 29 per cent over the next ten years and by 85 per cent over a 25 year period.
- Greater longevity has brought an increase in multiple long-term conditions and frailty; along with a corresponding increase in dependence on health and social care services. People over 75 are admitted as emergencies at a rate of 361 per thousand (equating to over 156,000 emergency admissions per annum – this figure has been steadily rising year-on-year). Reducing admissions and facilitating speedier discharge remains a priority – and there are a number of recognised preventative approaches that are ready to be standardised across the country. One such approach is the use of telecare.
- The TEC Programme recently undertook a feasibility study to understand the scope and benefits of switching current telecare provision from a predominantly analogue based system (i.e. through traditional telephony connections) to a digital service. The study highlighted that the telecare landscape in Scotland is very fragmented. There are 22 Alarm Receiving Centres (ARCs) delivering telecare solutions for, or on behalf of, Scottish public bodies, a wide range of telecare providers and a range of equipment being used. Given Local Authorities and IJBs are starting from different positions poses a number of challenges in moving to a universal approach for delivering telecare services.
- Technology can help to support new ways of working and help address many of the issues but it is not a 'silver bullet' and must be considered alongside wider health and social care transformation.

Telecare Uptake

- Based on an analysis of national uptake, around 1 in 5 of people aged 75+ are in receipt of telecare. However, we estimate that within this cohort at least one third could potentially benefit from telecare, with this rate higher in more deprived communities. This is backed up by anecdotal evidence and expert opinion.
- There is an opportunity to improve uptake across all Local Authorities, particularly in areas where the current uptake is significantly below the proposed national target. However there are multiple barriers that are currently limiting uptake which would need to be overcome including:
    - Perception - the way in which telecare is presented may have an influence on acceptance. Often telecare is seen as something that people get when they cannot manage or cope on their own, or that is associated with a disability or simply old age.
    - Awareness - many authorities reported that awareness of the service was a key barrier to increasing uptake amongst staff and wider public awareness. More needs to be done in raising awareness and knowledge building amongst the range of health and social care providers that service users may use and amongst family and carers.
    - Cost - a combination of affordability issues for some while for others it may be a perception that it does not represent value for money for the service user.
    - Response - in many areas users are dependent on volunteers (e.g. friends and family) acting as nominated key-holders to provide a response service which is often a barrier for those people who have a limited support network. However, in around half the areas of Scotland, no response or a limited response (e.g. out of hours only) is provided due to staffing and geographical limitations.

- Connectivity is not a current barrier, however in the future as the use of digital telecare devices increases, connectivity may become an issue due to limited mobile phone reception and broadband in some areas particularly in rural communities.
- If uptake is to increase then each of the above barriers must be addressed and more innovative approaches may need to be considered.

Universal Approach

- The question of what a universal approach means was discussed as part of the stakeholder engagement. Through these discussions, a number of service characteristics were identified which collectively describe what a universal approach could look like in the future.
- The service characteristics reviewed with stakeholders are shown in Figure 1. A number of the characteristics were taken forward for costs and benefits analysis – these are highlighted in white.

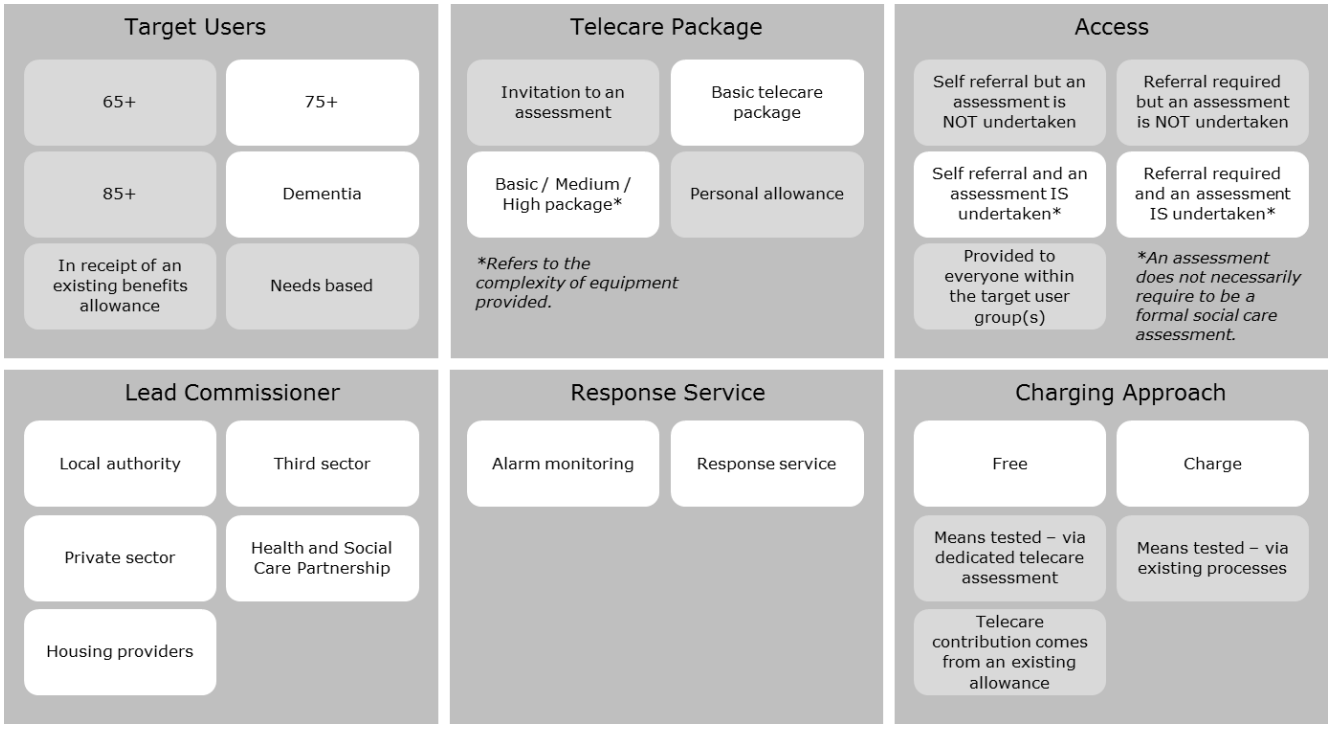


Figure 1: Universal Telecare Approach Service Characteristics

Cost and Benefit Analysis

- Based on the analysis, it is estimated Local Authorities spend around £39m per annum to provide telecare to 20% of people within the 75+ cohort nationally. Based on our analysis we estimate this generates benefits of around £99m per annum to the Scottish public sector. Around two thirds of benefits accrue to the social care sector and the remainder to NHS Scotland.
- The analysis shows that turnover of users has an important impact on the benefit to cost ratio of investment as follows:
  - Users on the service for 1 year provides an overall benefit to cost ratio of around 1.2:1
  - Users on the service for 2 years provides an overall benefit to cost ratio of around 1.6:1
  - Users on the service for 3 year provides an overall benefit to cost ratio of around 1.8:1
- It is important to note that these benefits are largely non cash releasing but primarily relate to the prevention and delay of care home or hospital admissions. Around two thirds of these benefits accrue to the social care sector and the remainder to the NHS:

- 53% of benefits relate to reductions in care home bed days;
- 34% of benefits relate to reductions in hospital bed days;
- 10% of benefits relate to reductions in ambulance call outs; and
- 3% of benefits relate to a reduction in home care visits.

Figure 2 shows the indicative annual costs and benefits if the national telecare uptake amongst the 75+ cohort was to increase to 34% and 44% and the impact of including dementia users (irrespective of age) in a national approach.

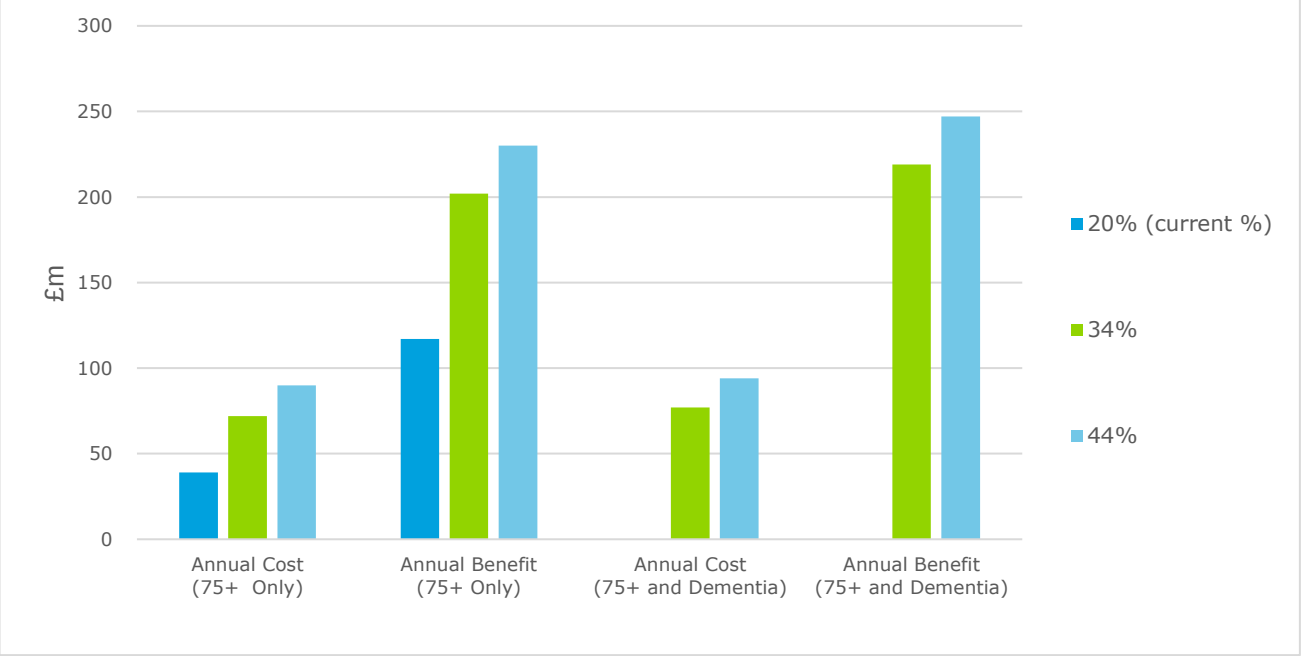


Figure 2: Cost and Benefits of increasing telecare uptake.

- Under current arrangements, investment would be met by Integrated Joint Board's (IJB) social care budgets despite many of the benefits being realised within other health and social care organisations. A key challenge to IJBs when making additional investment cases for telecare is that these relate to benefits that are largely cash avoidance.
- IJBs are in varying states of readiness to make a sustainability case for continued funding. Whilst it is expected that Scottish Government and most IJBs will continue to see the provision of telecare as an important component of providing health and social care services, it will be competing against other key priorities for funding. Therefore, it should not be assumed that the current 'status quo' and levels of take-up will continue unless there is continued focus and investment from all parties.

Delivery / Commissioning Options

- Whist a universal approach would deliver benefit (both monetary and qualitative) by increasing the number of people in receipt of telecare, further consideration is needed on the most effective way forward to achieve this. This study has identified three broad options for consideration to be taken forward in Scotland.
  - **Option 1: Status Quo** – IJBs and Local Authorities would continue to retain discretion as to whether to provide telecare services and the form of these services including policies, processes and standards. The affordability challenge faced by Local Authorities and IJBs under the status quo could result in a stagnation in growth, or even a fall in telecare use in Scotland and prevent an increase in uptake to levels that would deliver most benefit.

- **Option 2: Process Standardisation and Harmonisation** – IJBs and Local Authorities would continue to lead telecare services with a greater focus on working collaboratively including a harmonisation or standardisation of policies and processes to drive greater quality and efficiency of service across the country. In particular IJBs would work together to address the issues of fragmentation identified in the Farrpoint report including multiple ARCs, variety of processes, equipment and telecare providers to create a coordinated and efficient approach to the analogue to digital telecare transition.
- **Option 3: Shared Services Delivery Model** - it may be difficult to attain the quality, equity and safety of service required under options 1 and 2. Therefore, a further two options that entails a more radical redesign of the delivery model through shared services are identified for further consideration:
  - Option 3a - this would involve an IJB, third party or social enterprise leading the service on behalf of all IJBs to provide telecare services to all users within the target cohort(s).
  - Option 3b - similar to option 3a, however users with more complex care needs which require access to a wider package of care would continue to access telecare from their local IJB telecare service.

1.3 Summary Recommendations

A number of recommendations from the work undertaken are set out for consideration and discussion:

- The Scottish Government and COSLA should encourage increased take-up of telecare as evidence demonstrates that at least a third of the population in the over 75+ cohort, and higher in deprived areas, would benefit from a telecare intervention.
- Local Authorities and housing associations should build upon the cost and benefit analysis set out in this report to develop local sustainability cases to ensure continuation of local services and help to articulate purpose of the service to stakeholders.
- Telecare technology is advancing and it is likely that equipment provided today will look very different in the future as new technologies emerge. Research shows that there has been a consistent trend over the past two decades of technology costs decreasing in almost all technology sectors. Currently technology accounts for around 20% of annual operating costs and focus should be on reducing these costs as these new technologies emerge to make the overall case for investment more compelling.
- The TEC programme is funding a number of small scale tests of change to examine opportunities for integrating telecare and telehealth services (this funding does not include facilitating the convergence of the technology). An integrated approach to the delivery of telecare and telehealth services presents opportunities to embed standardisation across a number of areas such as a common technology platform, funding arrangements, charging and service access.
- The charging approach for telecare varies considerably across Scotland ranging from £1 per week (West Lothian) to £8.40 per week (Edinburgh). A number of authorities use a means testing approach to take account of people's circumstances however the majority charge a set fee irrespective of income due to the admin overhead/cost associated with a means testing approach despite national guidance from COSLA suggesting means testing in all instances. It is a recommended that a review of the charging policy be considered as part of any further work.
- Although call monitoring and response in the context of the wider health social care agenda is outside the scope of this study, it is recommended that a detailed evaluation of the options is undertaken. A number of health and social care services are dependent on a response service and therefore there will be significant opportunity for rationalisation and standardisation when considering telecare response in this wider context.

- Local Authorities should focus on working collaboratively to achieve greater harmonisation and standardisation of policies and processes to drive equity of service across the country. Around 80% of operating costs are people related. Common process and standards should be based on good practice from elsewhere to reduce these costs and overcome some of the barriers to telecare identified during this study. Shared services is one option that could be considered for the provision of telecare services in the future.
- If the above is unsuccessful in reducing costs and driving up more consistent take-up rates and equity of service, more radical service delivery options should be considered further.

2 Introduction

2.1 Background

The strategic and operational framework for the development and delivery of telehealth and telecare in Scotland is set out in the National Technology Enabled Care (TEC) Strategic Action Plan published in August 2016[2]. Whilst there is significant activity underway to increase telecare uptake, there still remains a significant variation in provision across Scotland as shown in Figure 3 below.

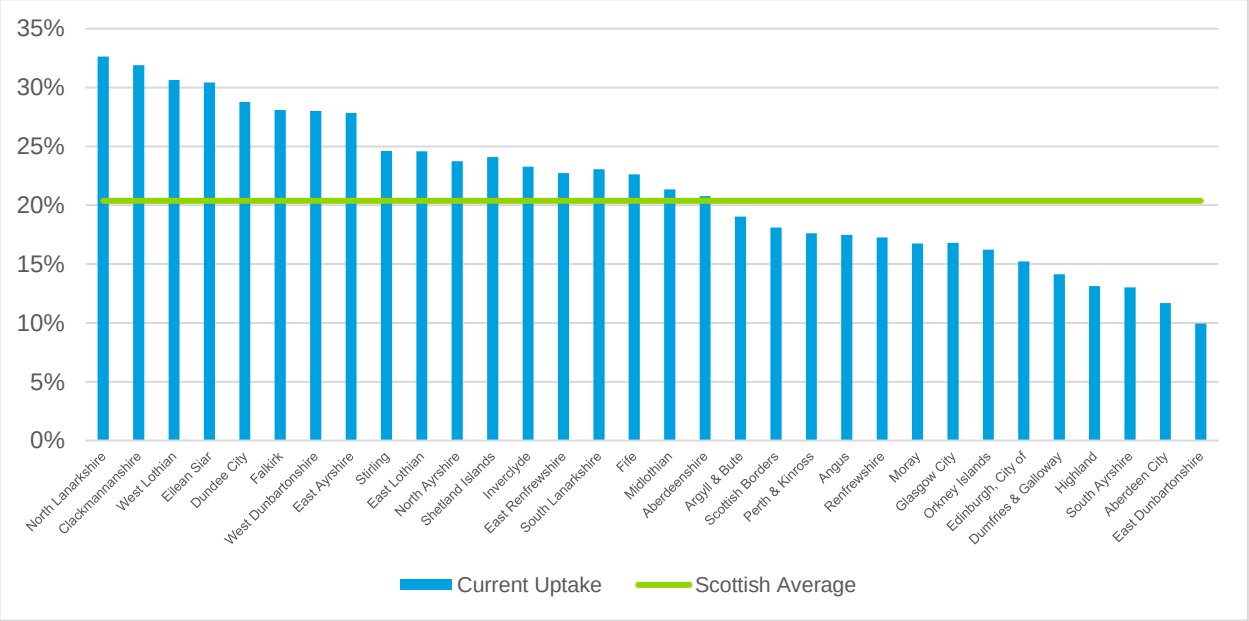


Figure 3: Telecare uptake across Scotland by Local Authority for the 75+ cohort (October 2016)

In November 2016, as a response to addressing the variation of telecare provision, the Scottish Government's Health and Social Care Management Board, and COSLA's Health & Wellbeing Executive Committee, agreed a feasibility study should be undertaken to examine what a universal approach to the provision of telecare services for the over 75s would look like. It was recognised that there may also be merit in considering people with a diagnosis of dementia who are under 75 given the evidence on its effectiveness for that particular client group. This is with a view to supporting older people to remain independent in their own homes, thereby reducing hospital admissions, reducing discharge times and aiding discharge after a crisis.

The outcome will be used:

- by Scottish Government and COSLA in considering policy development and further investment in the shift to more preventative services, to support health and social care integration;
- by local health & social care partnerships and housing associations to understand any lessons learned in terms of implementing this shift locally; and
- by Scottish Government and local partnerships, COSLA and the Scottish Local Government Partnership to understand the most cost effective models, based on the cost-benefit analysis to support business planning.

The definition of Telecare, for the purposes of this work, is care provided through the use of a personal alarm and/or home sensor(s), connected between a base unit in a home (including sheltered housing, care homes etc.), to a contact centre (or Alarm Receiving Centre) that responds to alarms via local protocols.

The term universal is used in this report in relation to making the service equitable. However it does not mean telecare is provided without an assessment or charge but it also does not preclude this.

2.2 Feasibility Study Approach

The study was undertaken between November 2016 and March 2017 as illustrated by Figure 4 below. A key aspect of the study was undertaking stakeholder engagement. This has included: working sessions with the Project Steering Group and Local Authority telecare leads; individual interviews with a range of operational and strategic stakeholders from Local Authorities; Convention of Scottish Local Authorities (COSLA); NHS Scotland; Scottish Government; Social Work Scotland and Association of Local Authority Chief Housing Officers (ALACHO); and the issuing of a survey to Local Authorities in order to gather information about existing telecare services and views on applying a universal approach. A significant amount of desk based research was also undertaken to gather evidence in relation to telecare costs and benefits.

Please refer to Appendix A for a full list of stakeholders consulted.

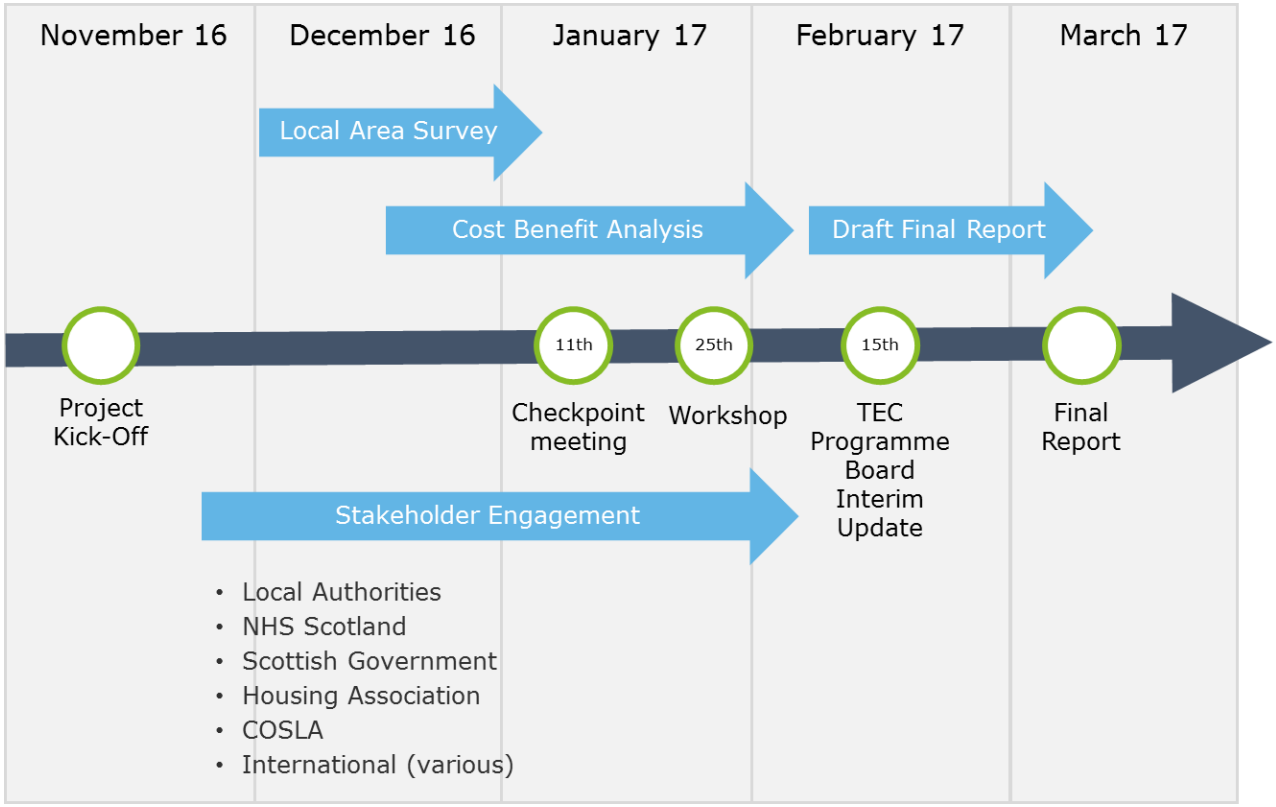


Figure 4: Project Plan

The report is structured as follows:

- **Section 3: Telecare landscape overview** – this section sets out key challenges faced by health and social care services in Scotland and the role of technology to support new ways of working. It also identifies links to other relevant Scottish Government policy developments that should be taken into consideration when examining feasible options for a universal telecare approach.
- **Section 4: Current telecare approach** – this section provides an overview of the current telecare landscape across Scotland based on research undertaken during the desktop review, stakeholder engagement and Local Authority survey;

- **Section 5: What would a universal telecare approach look like?** –this section provides a discussion on the service characteristics to be considered when thinking about a universal approach and options for policy makers to consider going forward;
- **Section 6: Financial cost and benefits analysis** – this section sets out a number of scenarios to estimate the costs and benefits of increasing telecare uptake; and
- **Section 7: Conclusions** – this section identifies areas for consideration and next steps to progress the findings identified during this study.

3 Telecare Landscape Overview

3.1 Introduction

This section sets out key challenges faced by health and social care in Scotland and the role of technology to support new ways of working to help address the issues identified. It also identifies links to other relevant Scottish Government policy developments that should be taken into consideration when examining feasible options for a universal telecare approach.

3.2 The Development of Telecare

The use of telecare has evolved over decades starting with the development of alarms that initiated a rapid response in an emergency. Over the past 20 years, the development of new telecare technology has advanced. Today, technology systems support individuals with mobility, sensory or cognitive problems and help improve quality of life for people with long term conditions, enabling many to maintain a degree of independence for longer[3].

Telecare comprises of a broad spectrum of applications and service elements that fall under the definition of telecare technology. This can be classified into three generations of telecare (based on an evolution of the traditional 'social alarm' model) as illustrated by Figure 5 below.

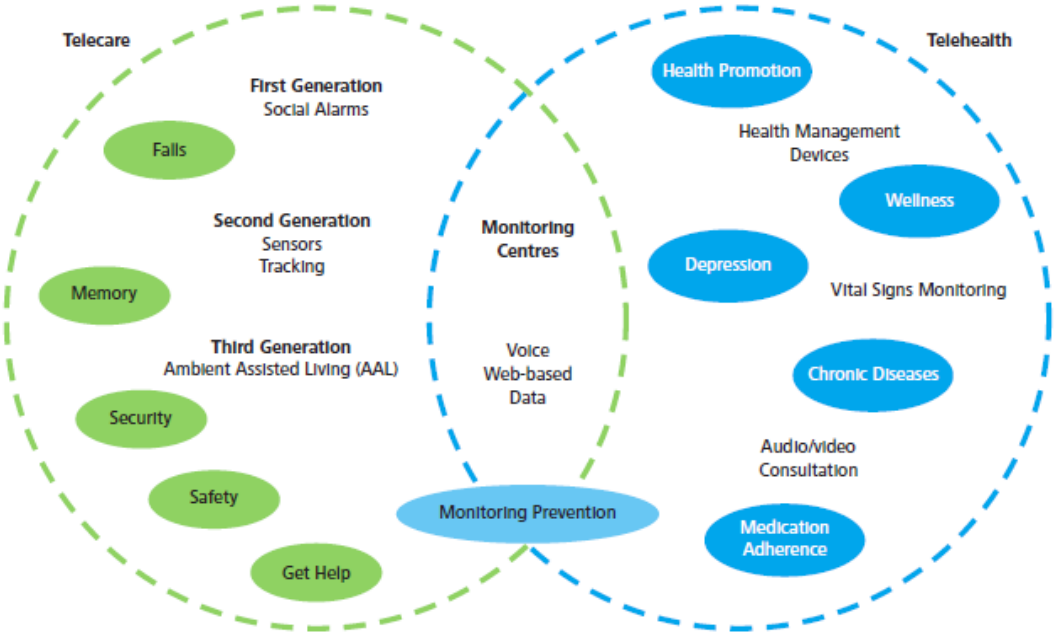


Figure 5: The broad spectrum of telecare and telehealth uses and services

- **First Generation:** these use telephone units and an attachment with a button that can be triggered by the user in case of requiring assistance. After receiving the call by monitoring centre systems, an initial diagnosis of the nature and urgency of the need can be explored by voice link. Following an established protocol, the required personnel are alerted at the time of an emergency.
- **Second Generation:** these are more advanced with automated social alarm systems triggered automatically, enabled by the implementation of sensors such as smoke, fire and flood detectors meaning there is no need for the older person to actively trigger the alarm. When activated, these trigger an alert to the monitoring centre and initiate the necessary response.

- **Third Generation:** these are the most advanced telecare devices which automatically record everyday data through various sensors such as front door open/close detectors, fridge open/close detectors, pressure mats, bed/chair occupancy and electrical usage sensors. The data is analysed on a regular basis by centre to monitor wellbeing and assess the need for help and support.

Currently, the telecare market is most mature for first-generation telecare devices which are widely used compared to second-generation equipment such as tracking sensors and third generation equipment like ambient assisted living devices.

There is also an increasing move towards combining sensors with logic to deliver innovative solutions, for example a user with dementia who opens the door outside agreed hours would only trigger an alert if a motion senor in the inside of the door along with the door open sensor is triggered therefore reducing the number of false alerts.

Whilst third generation and Mobile Telecare and Video-based Telecare devices provide the most potential to transform telecare, any proposal for a universal approach must remain cognisant of limitations including the availability of appropriate infrastructure and the ability of Telecare providers to provide digital solutions.

It should also be recognised that telecare technology is constantly advancing and it is likely that the equipment provided today will look very different in the future as new technologies emerge. Deloitte research[4] shows that there has been a consistent trend over the past two decades of technology costs decreasing in almost all technology sectors. Ultimately, there will be less reliance on dedicated telecare devices and much greater use of citizens own smart technology. Focus should be reducing the overall cost of the service as these new technologies emerge.

Benefits of telecare

There have been numerous national and international research studies and evaluations regarding the benefits of telecare. Within Scotland's context, studies include a review of the Scottish Government's Telecare Development Programme (2006 – 2011) by Newhaven research[5] and the use of telecare for people with dementia in Renfrewshire, carried out by the York Health Economics Consortium[6].

The majority of studies have shown a positive impact across a range of criteria, although there has been less focus on cost effectiveness. This is due to a number of factors including: variance in the quality of evidence largely due to the diversity of definitions and technology used and the varying needs of the different user group; the criteria used for evaluation; and the length of the studies.

However from a qualitative perspective, based on desktop research, information provided by operational stakeholders and local customer satisfaction surveys, when used telecare can:

- enhance dignity, independence and quality of life as it reduces the need for people to be 'checked on' by family and care workers and enables people to stay independent and safe at home;
- gives confidence to vulnerable people to be more active;
- allow users to reassure their family or carer that in the event of an emergency there is a monitoring process in place that will alert the relevant individuals and emergency services;
- bring improvements in the health and well-being of carers, whose health can be improved because the people they are caring for are able to live more independent lives;
- help to reduce cost of care by using technology to do the monitoring that would normally be carried out by a carer;
- reduce the number of unplanned admissions and readmissions to hospital;
- prevent and/or delay admissions to care homes;

- speed up the hospital discharge process as a monitoring service provides reassurance to the medical profession and authorities; and
- avoids the need for the emergency services to break down the door to gain access in the event of an emergency if a 'key safe' has been installed.

Telecare has potential benefits for people with dementia providing it is introduced early on in the care of an individual with dementia. For example, it can enable people to live independently for longer, reduce stress on people with dementia and carers and can potentially enhance the quality of life for people with dementia and give them greater choices about their care. For carers, there is evidence to suggest that since the introduction of telecare in to their caring situation, they have benefited from more peace of mind, a better night's sleep, improved the relationship with the person(s) they cared for, the opportunity to continue with activities they might otherwise have to give up, the ability to remain in paid employment in some cases, and more confidence about the safety and comfort of the person they cared for[7].

As illustrated by Figure 6 below, a 2016 survey of telecare users carried out for one of the Local Authorities in Scotland found that the overwhelming majority of service users felt that telecare made them feel more independent in their homes and gave them and their family reassurance about their safety and wellbeing.

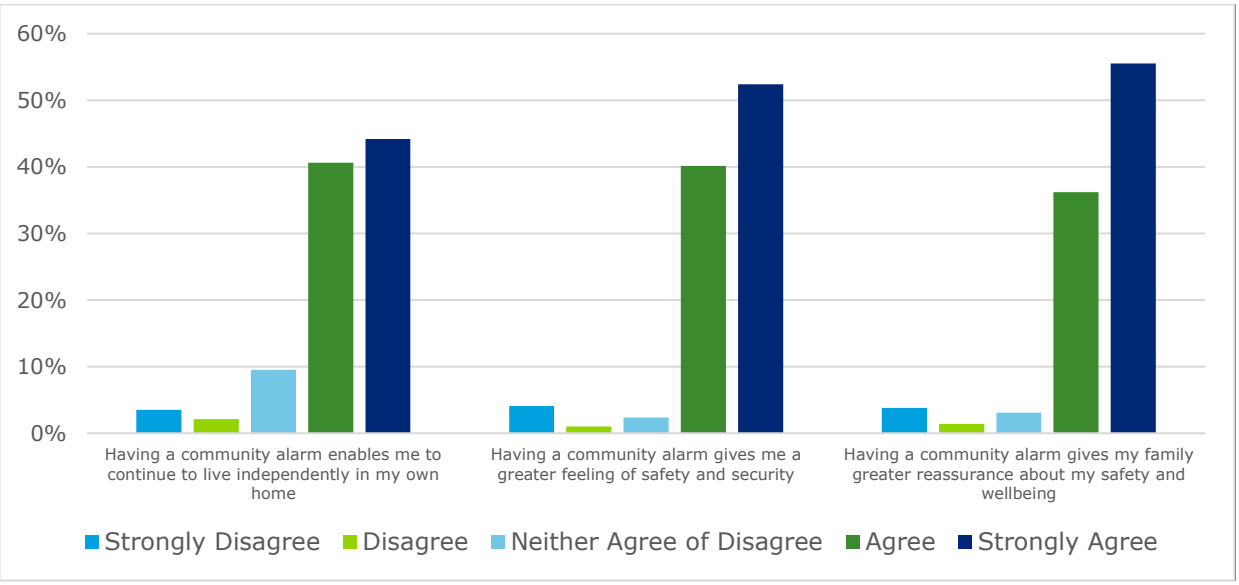


Figure 6: Local customer satisfaction survey results August 2016 (based on 400 responses from one local area)

Transition from Analogue to Digital for Telecare Services in Scotland

Telecare works by transmitting alerts across the UK's telephony network. This network is largely analogue and is nearing obsolescence. In response, BT (and other network providers) are embarking on a major digital upgrade to the UK's telephony infrastructure (PTSN), with an anticipated completion date of 2025. In response, the TEC Programme recently undertook a feasibility study to understand the scope and benefits of switching current telecare provision from a predominantly analogue based system (i.e. through traditional telephony connections) to a digital service.[8]

The study highlighted that the telecare landscape in Scotland is very fragmented. There are 22 Alarm Receiving Centres (ARCs) delivering telecare solutions for, or on behalf of, Scottish public bodies, a wide range of telecare providers and a range of equipment being used. Given Local Authorities are starting from different positions poses a number of challenges in moving to a universal approach for delivering telecare services.

It is expected that the switch from analogue to digital will take 5 years but early adopters in the digitization area has already started. Connectivity is a major issue across many parts of the country

particularly in remote and rural areas. However, several new base stations are being built in rural areas of Scotland to increase the mobile footprint. According to the United Nations 2016 publication by Ofcom, "the availability of superfast broadband has improved, but a significant number of homes and businesses are still at risk of digital exclusion". In 2015 around 8% of UK premises (2.4 million) were unable to receive broadband speeds faster than 10Mbit/s. Although this figure has since fallen to 5% of UK premises, this still means 1.4 million premises are being poorly served and may fall within a broadband universal service obligation[9].

3.3 Telecare in the context of the Health and Social Care landscape

Some of the most significant related influences on health and social care in recent years include:

- More people living longer, accompanied by increasing and complex long-term health problems;
- Health and Social care services are experiencing significant financial pressures and need to find ways of lowering costs while maintaining or improving the quality of care provided;
- Acceleration of innovative technology;
- Convergence of telehealth and telecare; and
- The integration of health & social care and the service redesign opportunities from a pooled budget that this represents.

More people living longer, accompanied by increasing and complex long-term health problems

The past few decades have seen significant improvements in life expectancy. The number of people aged 75 and over in Scotland is projected to increase by around 29 per cent from 0.43 million in 2014 to 0.56 million in 2024. It is then projected to continue rising, reaching 0.8 million in 2039 – an increase of 85 per cent over the 25 year period[10].

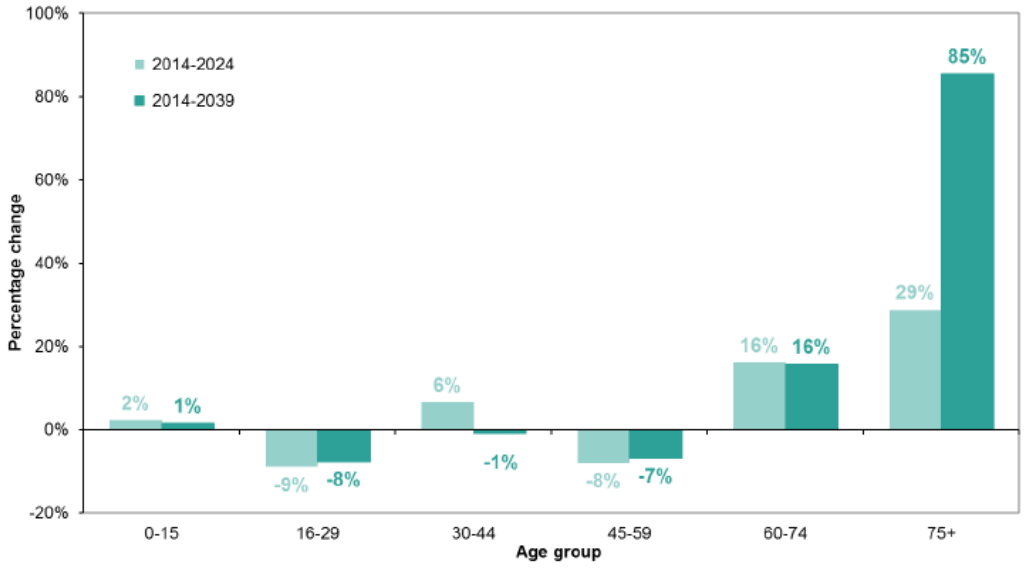


Figure 7: The projected percentage change in Scotland's population by age group, 2014-2039 (Source: National Record of Scotland: Projected Population of Scotland 2014)

Greater longevity has brought an increase in multiple long-term conditions and frailty; along with a corresponding increase in dependence on health and social care services. The Scottish Government estimates that the need for these services will rise by between 18 and 29 per cent between 2010 and 2030[11]. In the face of these increasing demands, the current model of health and care services is unsustainable:

- The Scottish Government has estimated that in any given year 2% of the population (around 100,000 people) account for 50 per cent of hospital and prescribing costs, and 75 per cent of unplanned hospital bed days[12].

- A patient's discharge from hospital may be delayed when they are judged to be clinically ready to leave hospital but unable to leave because arrangements for care, support or accommodation have not been put in place. In 2014/15, this led to the NHS in Scotland using almost 625,000 hospital bed days for patients ready to be discharged[13].
- An increasing number of people are competing for the services of a decreasing number of carers, with the number of people of working age compared to those who are retired likely to fall from a ratio of 4:1 to 2.5:1 within the next 40 years[14]. At the same time, the over 75s are placing increasing demands on primary and hospital care services.
- An estimated 93,000 people have dementia in Scotland in 2017. Around 3,200 of these people are under the age of 65. Existing figures for the number of people with dementia are likely to be underestimates as they are based only on referrals to services[15].

Currently, over 50,000 people over the age of 75 live alone[16], with childless widows and those who have infrequent contact with their children or without adequate transportation, among the loneliest of older people. Loneliness is linked to pattern of depression and increased suicide rates. Chronic loneliness is a public health issue, associated with: significantly greater risk of cardiovascular disease and stroke; a more rapid progression of Alzheimer's disease; suppression of the immune system; higher rates of smoking; and increases likelihood of early admission to residential or nursing care[17].

Around two thirds of people with dementia live in the community, often with a spouse or family member as their main carer[18]. This can result in significant emotional and financial strain for the carer. People with dementia take-up between a third and half of all long-stay hospital beds in geriatric wards[19]. Targeting people who have been diagnosed with dementia for telecare has the potential to reduce healthcare costs while supporting the person and their carer.

Health and Social care services are experiencing significant financial pressures and need to find ways of lowering costs while maintaining or improving the quality of care provided

As a result of the pressure on the health and social care system, there is widespread recognition that health and social care services need to be provided in different ways. There needs to be a greater focus on anticipatory care, helping to reduce admissions to hospitals and better support to allow people to live independently in the community.

The 2020 Vision for Health and Social Care in Scotland states the key aim is to allow people "to live longer healthier lives at home or in a homely setting". Key priority areas include working in partnership; developing and delivering services that are person centred and prevention in support of older people through integrated services.

Acceleration of innovative technology

Whilst the scope of this study is restricted to use of telecare services, it is important to understand how technology-enabled care (TEC) is being used/could be used within the wider health context and in particular the convergence of telecare and telehealth.

Connected health or TEC is the collective term for telecare, telehealth, telemedicine and mHealth. TEC involves the convergence of health technology, digital media and mobile devices and is increasingly seen as an integral part of the solution to many of the challenges faced by health and social care services. TEC has the potential to enable more people to be cared for in their own homes by supporting them in managing their own care needs more effectively.

There is a growing body of research showing that TEC, in particular mobile and digitally enabled technology, has the potential to reduce healthcare costs, increase access and improve outcomes. Many individuals will have a range of needs that can be met by multiple technology based solutions.

Within Scotland's context, studies include a review of the Scottish Government's Telecare Development Programme (2006 – 2011) by Newhaven research[20] and the use of telecare for people with dementia in Renfrewshire, carried out by the York Health Economics Consortium[21]. It gave

estimated net savings attributable to the 325 clients with dementia, over the five-year period, of over £2.8 million. This equated to approximately 65% saving in care home admission costs and 31% hospital admissions and bed days. In addition, people and their carers reported improved outcomes on health and wellbeing.

Similar impacts were also demonstrated through the Scottish Government's Telecare Development Programme (2006 – 2011), which through the provision of telecare packages to around 44,000 people led to around 2,500 hospital discharges being expedited, and around 8,700 unplanned hospital admissions and over 3,800 care home admissions being avoided. Over the five year period, health & social care partnerships saved around 546,000 care home bed days; 109,000 hospital bed days through facilitated discharges and unplanned admissions avoided; 48,000 nights of sleepover/wakened night care; and 444,000 home check visits – for a national investment of £20.35 million, this equated to the gross value of TDP funded efficiencies being approximately £78.6 million[22].

A study conducted by FACE Recording & Measuring Systems Research aimed at assessing the cost-saving potential of telecare solutions deployed by local authorities in England estimated a potential savings of £3-7.8m for a typical council (between 7% and 19% of the older people's social care budget). Average weekly costs of telecare provision to meet each service user's needs was £6.25 compared to an average weekly pre-telecare package cost of £167. The estimated cost benefits were over £3m[23].

Convergence of telehealth and telecare

The direction of travel is that of an integrated TEC service to provide a single, consistent, individual-focused response to individuals with a range of care needs. In particular it is likely telehealth and telecare will converge and be considered as a single solution as many individuals will have a range of needs that can be met by both telehealth and telecare e.g. a person may have a heart condition, the management of which can be supported through telehealth monitoring; as well as dementia, for which a range of telecare options may assist that individual to remain living independently at home.

This will also provide health and social care professionals with information that can help them understand changes in the patient's condition and when intervention might be needed. As more and more data becomes available from sources like electronic health records, wearable medical devices, and social media and from the users themselves, analytics can increasingly help detect patterns in information, delivering actionable insights and enabling self-learning systems to predict, infer, and conceive alternatives that might not otherwise be obvious. In the future, such analytics-driven insights are likely to play a major role in helping health and social care organisations improve costs and quality, identify and better treat at-risk populations, connect with consumers, and better understand the performance of health and social care interventions on health outcomes.

The TEC programme is funding a number of small scale tests of change to examine opportunities for integrating telecare and telehealth services (this funding does not include facilitating the convergence of the technology). Lessons learned should be used to help advance the case for a single telehealthcare service across all local areas rather than a separate service for telecare and telehealth.

Recent development in mobile technology, particularly smart phone and the development of mobile applications (apps), have the potential to transform telehealth and telecare. Apps are changing the way that the public interacts with technology. Internationally there are over 140,000 medical, health and fitness apps alone. These provide information about diseases, medicines and medical devices and can track symptoms and send alters. Many apps are aimed at healthcare professions but increasing numbers are designed for patients.

Technology can help to support new ways of working and help address many of the issues identified above but it is not a 'silver bullet' and must be considered alongside wider health and social care transformation.

The integration of health & social care and the service redesign opportunities from a single budget that this represents

The integration of health and social care is part of the Scottish Government's programme of reform to improve care and support for those who use health and social care services.

The single biggest reform to the way health and social care is delivered in Scotland, came in to force in April 2016 – bringing together NHS and local council care services under one partnership arrangement. Under this legislation NHS boards and Local Authorities are required to combine their budgets for adult social care, adult primary healthcare and aspects of adult secondary healthcare. Health and Social Care Partnerships (HSCP) are the organisations formed as part of the integration of services provided by Health Boards and Councils in Scotland. There are 31 HSCPs across Scotland and one Lead Agency.

HSCPs are expected to coordinate health and care services and commission NHS boards and councils to deliver services in line with a local strategic plan. This presents a significant opportunity for wider service re-design given the access to pooled budgets and a coordinated approach to service delivery.

3.4 Scotland Policy Landscape

There are a number of Scottish Government policy developments across Health and Social care that a universal approach for telecare should be cognisant of.

Christie Commission - Future Delivery of Public Services in Scotland

The Christie Commission report on the Future Delivery of Public Services in 2011 remains the basis for public service reform in Scotland. The report established the principles of reform and was adopted by the Scottish government. The report identified the challenges facing public services and set out principles of integrated service delivery with staff and citizen engagement. The Christie Commission estimated that 40 per cent of all spending on public services is accounted for by interventions that could have been avoided by prioritising a preventative approach[24].

Health and Social Care Delivery Plan

The Scottish Government's Health and Social Care Delivery Plan published in December 2016 describes a vision of Scotland with high quality services that has a focus on prevention, early intervention and supported self-management. Where people need hospital care the aim is for people to be discharged as swiftly as it is safe to do so. The plan identifies digital technology as a key enabler to transforming health and social care services by making better use of digital technology and data so that care can become more person-centred.

Digital Public Services Strategy

The Digital Public Services Strategy, 'Realising Scotland's full potential in a Digital World', was published in March 2017, and sets out the Scottish Government's plans for ensuring that we put digital at the heart of everything we do – in the way in which we deliver inclusive economic growth, reform our public services and prepare our children for the workplace of the future. It recognises the challenges that digital poses for the nature of work, for society and for both the world and domestic economies[25].

Carers (Scotland) Act 2016

Scotland has an estimated 745,000 adults and 44,000 young people (approximately 15% of the population) who provide unpaid care to relatives and friends. It is widely recognised that unpaid carers are now the largest provider of care in the UK however the benefits of this support can be detrimental to the carers' physical and emotional wellbeing. The Carers (Scotland) Act 2016 is a key piece of new legislation that promises to 'promote, defend and extend the rights' of adult and young carers across Scotland. A key implication being that cost of providing carers is set to increase as a result of this legislation, putting even greater demands on health and social care budgets.

Extension of Free Personal Care - 'Franks Law'

Free personal care is available for everyone aged 65 and over in Scotland who have been assessed by the Local Authority as needing it. However, since the Community Care and Health (Scotland) Act 2002 was passed there is a perception that, for many people in Scotland who live with a life-limiting condition access to personal care has been restricted due to personal affordability issues.

At present, anyone under the age of 65 who requires personal care because they have dementia, motor neurone disease, Parkinson's disease, multiple sclerosis or Huntington's disease has to fund the cost of that personal care themselves. Frank's Law is a campaign to deliver free personal care to people with dementia under the age of 65.

In response to the concerns that have been raised by campaigns, including the Frank's law campaign, Scottish Government committed to conducting a feasibility study to report later this year looking into the possibility of extending free personal care to people under the age of 65. This has the potential to influence the thinking in relation to a universal telecare approach.

Focus on Dementia – Changing minds, improving lives in Scotland

Focus on Dementia is a partnership improvement programme which brings together and maximises the skills, expertise and knowledge of improvement professionals, policy practitioners and the third sector in order to support the continuing transformation and modernisation of dementia services in Scotland. Focus on Dementia actively supports application of the Technology Enabled Care programme[26].

Scotland's National Dementia Strategy

In June 2013, the Scottish Government published Scotland's second National Dementia Strategy which builds upon the progress to date of the first dementia strategy published in 2010 and highlights continuing challenges. It sets out its commitment to delivering world-class dementia services in Scotland in a series of 17 commitments[27].

Age, Home & Community: A Strategy for Housing for Scotland's Older People

Launched in 2011, the Scottish Government is committed to enabling older people to remain living in their own homes for as long as possible. This means working to ensure that, whether they live in mainstream or specialist housing, older people live in homes which are safe and secure and, where necessary, adapted to meet mobility needs. With substantial increases forecast in the number of people over 60, this has implications for the provision of housing and support services, as financial pressures grow[28].

4 Current Telecare Approach

4.1 Introduction

The implementation of telecare services across Scotland has varied significantly, which to some extent, is a response to local variations such as geography, demographics and underlying demand. The geography of Scotland has had a particular impact on rural and remote communities.

This section provides a high level overview of the current telecare landscape across Scotland based on research undertaken during the desktop review, operational stakeholder engagement and the Local Authority survey. This includes:

- Service uptake;
- Charging policy;
- Procurement;
- Assessment and packages;
- Procurement installation and maintenance; and
- Monitoring and response.

4.2 Service Uptake

Data from the Scottish Government's 'Social Care Services, Scotland 2016' report estimates that 121,000 people in Scotland receive a telecare service from a Local Authority service. However the sector suffers a shortage in reliable data collection on usage and take-up, whilst uptake figures amongst dementia users is not routinely recorded by many authorities. While Scottish Government has sought to drive greater usage of telecare, Local Authorities ultimately retain discretion as to whether to provide telecare services and the form of these services. The result is that the availability and use of telecare varies considerably by Local Authority as illustrated by Table 1 below. For those that choose not to apply for Local Authority care and support, telecare can also be provided to some users via housing associations or via the private retail market. There is limited data in relation to the uptake of these services within housing associations or the private market, however, it is unlikely to be comparable to the take-up levels achieved by Local Authorities.

Area	<65	65-74	75+
Scotland Wide	<1%	4%	20%
North Lanarkshire	1%	7%	33%
Clackmannanshire	1%	5%	32%
West Lothian	1%	7%	31%
Eilean Siar	<1%	4%	30%
Dundee City	<1%	8%	29%
Falkirk	1%	5%	28%
West Dunbartonshire	<1%	6%	28%
East Ayrshire	<1%	5%	28%
Stirling	<1%	3%	25%
East Lothian	1%	5%	25%
Shetland Islands	<1%	3%	24%
North Ayrshire	<1%	4%	24%
Inverclyde	1%	5%	23%
South Lanarkshire	<1%	5%	23%
East Renfrewshire	<1%	3%	23%
Fife	<1%	4%	23%
Midlothian	<1%	4%	21%
Aberdeenshire	<1%	3%	21%
Argyll & Bute	<1%	2%	19%
Scottish Borders	<1%	2%	18%
Perth & Kinross	<1%	2%	18%
Angus	<1%	2%	17%
Renfrewshire	<1%	3%	17%
Glasgow City	<1%	3%	17%
Moray	<1%	2%	17%
Orkney Islands	<1%	3%	16%
Edinburgh, City of	<1%	4%	15%
Dumfries & Galloway	<1%	1%	14%
Highland	<1%	2%	13%
South Ayrshire	1%	2%	13%
Aberdeen City	<1%	2%	12%
East Dunbartonshire	<1%	1%	10%

Table 1: Percentage of population in receipt of telecare by age group and Local Authority 2016[29]

Resources tend to be targeted at the people who would benefit from the support telecare can provide rather than based on age or specific disability. The criteria for telecare tends to be very open and inclusive which welcomes referrals from people with a physical disability, older people and people with learning disabilities.

There is high concentration of users within the 75+ cohort, however there is wide variation across the country from 10% to 33% uptake. The variance in uptake is likely to be due to a combination of factors for example:

- The relatively high uptake within North Lanarkshire may be explained by the charging approach adopted by the authority. A charge was only recently introduced in June 2016, however the charge has recently been dropped reverting back to the provision of a free service. Similarly, within West Lothian a free standard package was historically provided to everyone over 65 (however, this has recently been replaced by a needs based approach and a small charge has been introduced).
- The maturity of service is another possible factor, for example the service within Falkirk was established around 30 years ago whereas services in areas such as Dumfries and Galloway are relatively new and behind in terms of awareness and uptake.

- In affluent areas such as East Dunbartonshire where the uptake is lower, it is probable that this is potentially due to a relatively healthier older population which may have less need for telecare.

4.2.1 Barriers to uptake of telecare

Anecdotal evidence from engagement with operational stakeholders suggests that there are a number of potential users who have either withdrawn from, are not aware of, or refuse to use, telecare solutions for one or more reasons. However as records are not kept for unmet need, it is difficult to quantify the impact the barriers discussed below has on service uptake. If uptake is to increase then each of the barriers discussed below must be addressed and more innovative approaches may need to be considered.

Telecare Perception

The way in which telecare is presented may have an influence on acceptance. Often telecare is seen as something that people get when they cannot manage or cope on their own, or that is associated with a disability. However there is an increasing focus of trying to break this association by promoting the message that it can be of benefit to a wider range of residents and their families. There is also an increasing focus on supporting children and younger adults with telecare. As they become older people themselves they will have less expectation on more traditional and more expensive services, preferring using their own technology to support them with their health and care needs.

The 'wearability' of the equipment can be an issue for some people, particularly where the technology is clearly visible to others (e.g. a pendant around the neck) therefore creating a perception that the equipment is a symbol of old age. However emerging telecare technology means this should become less of an issue as devices are being developed to be more discrete (e.g. wrist fall detector) and in the future are likely to be increasingly incorporated into everyday devices such as smartphones.

Anecdotal evidence also suggests that some users may be reluctant to apply for telecare as they perceive the assessment process (including assessment of need and financial circumstances) to be an intrusion into aspects of their private life. However, some authorities allow users to self-refer, without the need for a formal social care assessment, for a basic package and where means testing is undertaken, typically users can choose to opt out and instead pay an agreed charge.

Awareness

Many authorities reported that awareness of the service was a key barrier to increasing uptake. More needs to be done in raising awareness and knowledge building amongst the range of health and social care providers that service users may use and amongst family and carers. This may be simply general awareness raising strategies across the public such as up to date leaflets or ad campaigns however other approaches are also being adopted:

- Encouraging and facilitating the promotion of telecare through partnerships with local community organisations and other public sector organisations. For example working with the Scottish Fire and Rescue service to identify those most vulnerable in the community. As well as installing smoke and heat detectors to guard against the risk of fire, a referral can be made to the Local Authority if other sensors may be beneficial.
- Reviewing the entry point into the service, for example the development of an online self-assessment is currently underway to improve sign-posting to each Local Authority service.
- Mandating that technology should always be considered as part of the protocols and procedures that exist within care organisations.
- Training of NHS staff and other professionals on the benefits of telecare and the referrals process.

- Showcasing of the telecare equipment, for example at least one Local Authority has set up a display of telecare equipment in GP surgeries to build awareness amongst the local population.

Costs

Local Authorities will typically require a financial contribution from the user. Anecdotal evidence suggests that cost is one reason why some people do not have telecare - a recent example being at North Lanarkshire where 8,000 users (around 35% of users) returned their equipment following the introduction of a small weekly charge in June 2016 (note this policy has since been dropped and a charge no longer applies). This was likely a combination of affordability issues for some while for others it may be linked to a perception that they should not be required to pay for a service when they do not have to pay for prescriptions etc. or they may feel they did not require the service and therefore it did not represent value for money. However anecdotal evidence based on a similar experience at Glasgow suggests that many users who leave the service following the introduction of a charge will return to the service at a later date.

There is also a perception that the cost of care—its availability and affordability—is seeing people priced out of using services, with a consequent cost to their wellbeing and with an impact on their unpaid carers[30]. This may be particularly true for those people with long-term conditions such as dementia and motor neurone disease under the age of 65 who are required to pay for their personal care needs (see 'Franks Law' in section 3.4 for further details).

Another issue is that many Local Authority finance systems cannot support weekly billing and therefore service users must pay on a quarterly basis. Anecdotal evidence suggests some users struggle to budget on a quarterly basis and fall behind on their payments as a result.

Response

Some Local Authorities use mobile responders, or similar, who can provide practical help in an emergency on a 24/7 basis. However, in around half the areas of Scotland, no response or a limited response (e.g. out of hours only) is provided due to staffing and geographical limitations. Users within these areas are dependent on volunteers (e.g. friends and family) acting as nominated key-holders to provide a response service which is often seen as a barrier to many people.

The service also suffers from a perception amongst some people that a response will always result in an ambulance call out (which in turn could lead to a stay in hospital). However over the past few years the use of lifting cushions and associated equipment by responder services (to assist people remobilise following a fall) has become well established, significantly reducing the number of calls to the ambulance service.

Digital Uptake

There is a potentially misleading perception amongst some Local Authorities/IJBs that the use of technology is a challenge for some older people. Research undertaken by Ofcom in 2015 found that only 19% of those who participated in the study within the 65+ cohort reported using a smartphone and half have a computer or broadband in their household (52% and 49% respectively)[31].

However these numbers are expected to increase significantly over the next 5 to 10 years and this is unlikely to be a significant barrier in the medium to long term as the next generation will be more technology advanced. It should also be noted that the majority of telecare is passive – i.e. it requires no input (or skill) as it relies on sensors to automatically send an alert (e.g. heat, gas) when triggered therefore no skills (digital or otherwise) are required by the user.

Connectivity

For analogue telecare devices, a phone line is a mandatory requirement. An increasing number of users may not have a phone line and are not willing to incur the cost. As, until recently, this was

not a widespread issue Local Authorities/IJBs were often willing to cover the cost of a phone line however, given the increasing numbers it is less common for them to waive this charge.

For digital telecare devices requiring a sim card, connectivity is an issue for mobile phone reception and broadband particularly in rural communities. Superfast broadband is rolling out across the country as part of the Digital Scotland agenda - this may encourage uptake as it is relatively slow otherwise in rural areas.

Local Priorities

Local Authorities ultimately retain discretion as to whether to provide telecare services and the form of these services including policies, processes and standards. Given the priority of telecare services may vary across Local Authorities in terms of focus and funding allocation, this could be a factor limiting uptake in some areas.

4.3 Charging Policy

Since the late 1990's, community alarms have been a chargeable service. When broader telecare services were first targeted for more widespread adoption, the Scottish Government provided extra funding which enabled the telecare and community alarm service to grow, which enabled the majority of authorities to provide telecare free of charge. However, as the funding reduced and pressure on social care budgets increased, charges became more common in the vast majority of authorities to recoup some costs, however, the intention never has been for the fee to cover the fairly significantly outlay of providing the service. Some authorities will charge for the community alarm service element of a telecare service and not for enhanced equipment, while some charge for the response service and not the equipment. Charges are set by the Local Authority under the auspices of the national charging policy overseen by COSLA and are typically reviewed annually with a small increase occurring in most years.

The charge varies considerably across Scotland ranging from £1 per week (West Lothian) to £8.40 per week (Edinburgh). A number of authorities use a means testing approach to take account of people's circumstances however the majority charge a set fee irrespective of income due to the admin overhead/cost associated with a means testing approach despite national guidance from COSLA suggesting means testing in all instances. In areas that means test, anecdotal evidence suggests between 60% and 80% of users pay a charge for telecare.

In some authorities the charge may be waived regardless of income e.g. due to terminal illness or if the user is based in sheltered housing, however, not all authorities adopt these exceptions.

It is recommended that a review of the charging policy be considered as part of any further work.

4.4 Procurement

In Scotland there are primarily three main suppliers of telecare equipment (Tunstal, Tynetec and CareTech) with a number of smaller companies supplying specialist equipment.

The Scotland Excel Telecare and Telehealth Technologies framework is used by all 32 Local Authorities across Scotland to procure telecare equipment and by a number of housing associations and Health Boards. The main advantage of the framework is it has helped leverage increased product interoperability which was previously a key issue prior to the framework agreement being set up in 2012/2013 and helped drive down overall costs through standardised pricing.

Whilst the majority of equipment will be procured via Scotland Excel, there are pockets of procurement activity directly from the suppliers where certain equipment is not available via Scotland Excel or a preferred supplier is not listed on the framework. Anecdotal evidence also highlights examples where equipment can be procured at a more competitive price from online retailers such as Amazon.

Within the next 18 months a new TEC framework is being established to include both telehealth and telecare equipment provision. It is anticipated that the new framework will enable easier access to emerging technologies.

4.5 Access to the Service

Access to the telecare service is usually universally granted via an assessment process which varies between Local Authorities. However, it may not always be necessary to have an assessed need to be eligible for telecare: it may be installed by some commissioning bodies for user or family peace of mind - this links to the prevention agenda (installing equipment before the person needs it).

There are typically three main sources for telecare referrals: via social work; a self-referral; or direct access via health or housing, supported by protocols to enable access. In the majority of cases where telecare is considered (whether as part of a referral or as a result of a preventative or re-enablement intervention) a telecare assessment is used to determine whether telecare is appropriate and to identify the most advantageous equipment to be deployed. This process can vary from gathering basic information of need over the telephone to a more detailed assessment via a needs form or a home visit.

Most authorities will provide tailored packages to the service user's needs although some authorities will provide a basic / standard package comprising of a basic pendent alarm and sometimes a smoke detector. Some authorities will provide access to the basic / standard package via self-referral where as more complex needs generally require a more in depth assessment. Some authorities may also undertake an assessment post installation of the equipment (for example after 6 weeks) and a yearly assessment to ensure the equipment is still appropriate for the user's needs.

In some instances a basic community alarm is provided as standard in addition to the warden call system in sheltered and very sheltered housing and in some learning disability/mental health group/supported housing settings.

Figure 8 and Figure 9 provides an overview of other types of telecare equipment typically provided to service users with more complex needs based on the Local Authority survey responses received (note the data collected is based on 14 telecare survey responses and therefore may not be an accurate representation across all authorities).

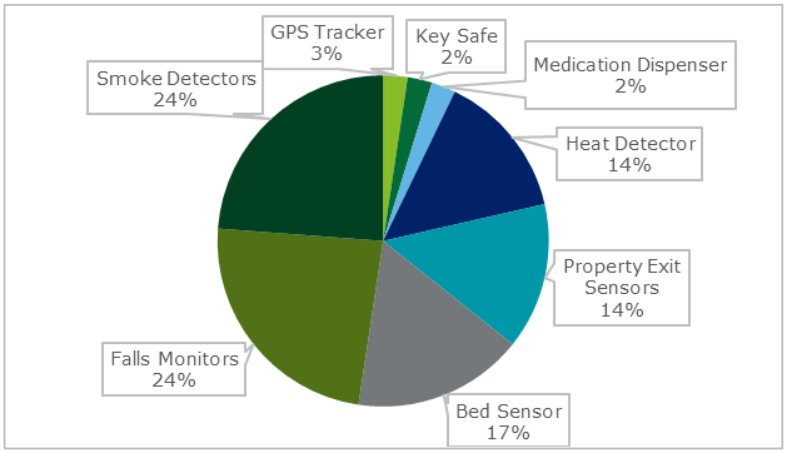


Figure 8: Most commonly used telecare devices for older people (excluding base unit and pendant)

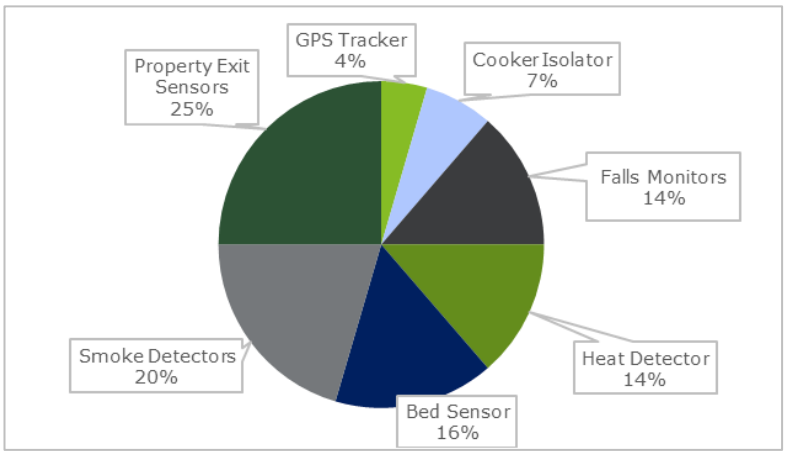


Figure 9: Most commonly used telecare devices for people with dementia (excluding base unit and pendant)

For people with Dementia, Alzheimer Scotland's guidance is that it is very important that assistive technology is personalised to the individual and not part of a 'set menu' or 'dementia package'. People with dementia experience very different symptoms that require different responses.

4.6 Equipment Installation, Maintenance and Removal

Service providers have a legal obligation to ensure the equipment they provide is fit for purpose and is maintained to health and safety standards. Service providers must be able to evidence compliance with this requirement through a robust audit trail of maintenance activity.

The responsibility for the installation, maintenance and removal of equipment will either be undertaken by community response services, a Care and Repair service or by an in-house team. In many areas external agencies will be used for the installation of more complex or specialist telecare equipment such as gas isolators.

The installation of telecare equipment can take from 4 hours up to 15 working days from completion of the assessment depending on the service provider. Most authorities will have processes in place to prioritise urgent cases. If a referral is received from a hospital discharge and there is equipment specified on the referral, some authorities will install the equipment at the time the service assessment is completed.

The key reasons for the variance in installation times are dependency on external agencies scheduling the work; urgency of the request; and location of the service user (e.g. in rural areas the user may be several hours drive away).

Most authorities have established maintenance programmes to ensure telecare equipment remains operational. Routine preventative and corrective maintenance visits are carried out by areas every 6 to 12 months. In some areas routine equipment checks are by telephone and when faults are identified a visit is arranged to rectify them. Service users are also be asked to test their pendant every month. If this doesn't happen on a regular basis, the ARC will contact the service user.

In most cases the devices will send a signal when it requires servicing or batteries need replaced. The frequency with which monitors/sensors are replaced varies, although most replace equipment as batteries expire or equipment fails. However, asset management in general remains an area for improvement.

4.7 Response

The response consists of two subcomponents: the first-line response and the second-line response. The first-line response is provided by the contact centre staff in the Alarm Receiving Centre (ARC) who take the call and decide on an immediate response. They may activate the second line response by requesting 'on the ground' response from the local response team, the user's nominated key holder or the emergency services.

Alarm Receiving Centres

As detailed in the Farrpoint report, there are 22 ARCs delivering telecare solutions for, or on behalf of, Scottish public bodies. ARC solutions deployed vary in their age and software release. ARCs typically fulfil a broader Local Authority customer service centre function covering CCTV, housing repairs, lone worker monitoring, homelessness services, social work standby, and anti-social behaviour response (although the specific telecare software is standalone).

The research undertaken by Farrpoint estimates that the ARCs have approximately 153,000 subscribers and receive around 4 million incoming Telecare alarm calls per annum. These calls are answered by a total of 256 full-time equivalent agents, an average of 12.8 agents per ARC.

Responder Services

The range of response service provided varies considerably between Local Authorities. The geography of Scotland has a particular impact on rural, remote and island communities and the level of response service that can be provided. The range of response services provided include:

- Dedicated 24 hour, 365 days per year responder service;
- 24/7 dedicated responder service augmented through the use of local volunteer support to support those areas where there are geographical challenges making it hard for a dedicated response team to attend emergency calls in an acceptable timeframe;
- Response service provided through the provision of contracted/purchased services from private providers, the voluntary sector, utilising home care services or family carer networks; and
- Some rural areas do not provide responder services directly, but rely on informal carers acting as key-holders and/or emergency services as required.

Some Local Authorities specify a minimum number of key holders per service user. If a service user is unable to identify their key holders then some authorities may only provide a limited response service or no response service at all.

Services can be accredited to the Telecare Services Association code of practice for monitoring, installation, response and service tailoring. Only a few Local Authorities are accredited to various parts of the code.

4.8 International Benchmarking

As part of this study we also reviewed telecare services in other European countries. A summary of the findings from our engagement with stakeholders from Spain and Norway is summarised below.

Based on the limited engagement we were able to undertake during this study, we did not identify any relevant telecare models for Scotland to consider in relation to a universal approach. The research demonstrates that Scotland is well positioned from an international perspective and that other countries are experiencing similar challenges to increasing telecare uptake, and in some case these challenges are exacerbated by the structure and set up of the national health system (e.g. the Norwegian system is based on 450 principalities).

Spain:

- Faced with an aging population (18 percent over 65) and a failing Spanish economy, Spain is using telecare as a means to keep its older population healthier and out of hospital.
- Spain comprises of 17 regions, each with its own policy structure for health, social services and welfare. Similar to Scotland this results in different levels of service and uptake across the country.
- Historically telecare services were run by the Red Cross however over the past decade there has been a shift towards the private sector acting as the lead provider for telecare across Spain.
- Typically, an individual must apply for telecare through their local authority, and if eligible they will be referred onto the relevant private provider for assessment and set-up.
- Service capacity is an issue in some regions and it is not uncommon to be put on a waiting list before being accepted for telecare due to budget pressures.
- Most regions have the concept of co-payment where the region and user will pay a contribution towards the service costs. This will vary between regions depending on local policy, however the user would typically pay between 15% and 40% of total monthly costs. This charge is usually means tested.
- Each provider has its own call monitoring centre. Based on the triage, the call monitoring will either alert the emergency services or the service user's nominated key holder.
- In Basque country Telecare and Telehealth are increasingly becoming connected. A recent study in Basque used a system known as 'TEKI', is based on a Microsoft Kinect sensor connecting to other health sensors. This platform is also used as a telemedicine platform to communicate with the patients. This study achieved $55 million saving in Year 1 through eliminating 52,000 hospital visits, a 7 percent cost reduction per patient.

Norway:

- Norway has a similar population to Scotland (5.5m) however is split into 450 principalities, each with its own policy structure for health, social services and welfare. This means it can be very difficult to introduce anything new and innovation is restricted to the larger principalities with capacity and budget.
- Only 4 principalities in Norway currently offer a telecare service however it is expected that the smaller principalities will follow as the larger principalities prove the benefits.
- Alongside the basic panic buttons, more advanced equipment is being tested. There is an increasing move towards combining sensors with logic to deliver innovative solutions, for example a user with dementia who opens the door outside agreed hours would only trigger an alert if a motion senor in the inside of the door along with the door open sensor is triggered therefore reducing the number of false alerts.

5 What Would a Universal Telecare Approach Look Like?

5.1 Introduction

In the previous section we set out how the telecare landscape varies across the country and the key barriers which limit uptake. In this section we consider how to define a universal approach to telecare, what this means and options for policy makers to consider going forward.

5.2 Desirable characteristics

To help identify the service characteristics for a universal approach, the following design principles were identified and agreed by the Project Steering Group. These describe the desirable characteristics for the provision of telecare across Scotland:

- **support the expansion of the service** – recognising that more people would benefit from telecare, the service must be able to scale as required;
- **provide equitable access to telecare services** – regardless of geography or demographics, everyone should have the same opportunity to access a standard level of telecare;
- **support early prevention of care needs** - anticipating and addressing the need for care by making telecare available to prevent or delay the requirement for more costly care requirements;
- **ensure the most vulnerable people have access to telecare** – regardless of geography or demographics, everyone who would benefit from telecare, particularly those who are deemed most vulnerable, should be able to access telecare;
- **provide demonstrable benefits** – the service should deliver clear benefits to the service user and to the wider public sector;
- **ensure a duty of care to the service users** – the service provider has an obligation to ensure the equipment and service is safe and contributes to the well-being of the service user;
- **align with the wider social care reform agenda** – including adopting universal standards or approaches where appropriate in areas such as response, call monitoring and charging;
- **align with Scotland's Digital Standards** – ensuring alignment to Scotland's Digital Strategy and relevant public sector digital standards.
- **be straight forward to administer** – minimising the need for complex and time consuming processes.

5.3 Service characteristics to be considered

The question of what a universal approach means was discussed as part of the stakeholder engagement. Through these discussions, a number of service characteristics were identified which collectively describe what a universal approach could look like in the future.

The service characteristics reviewed alongside the desirable characteristics above are shown in Figure 10. A number of the characteristics have been taken forward for costs and benefits analysis in the next section – these are highlighted in white.

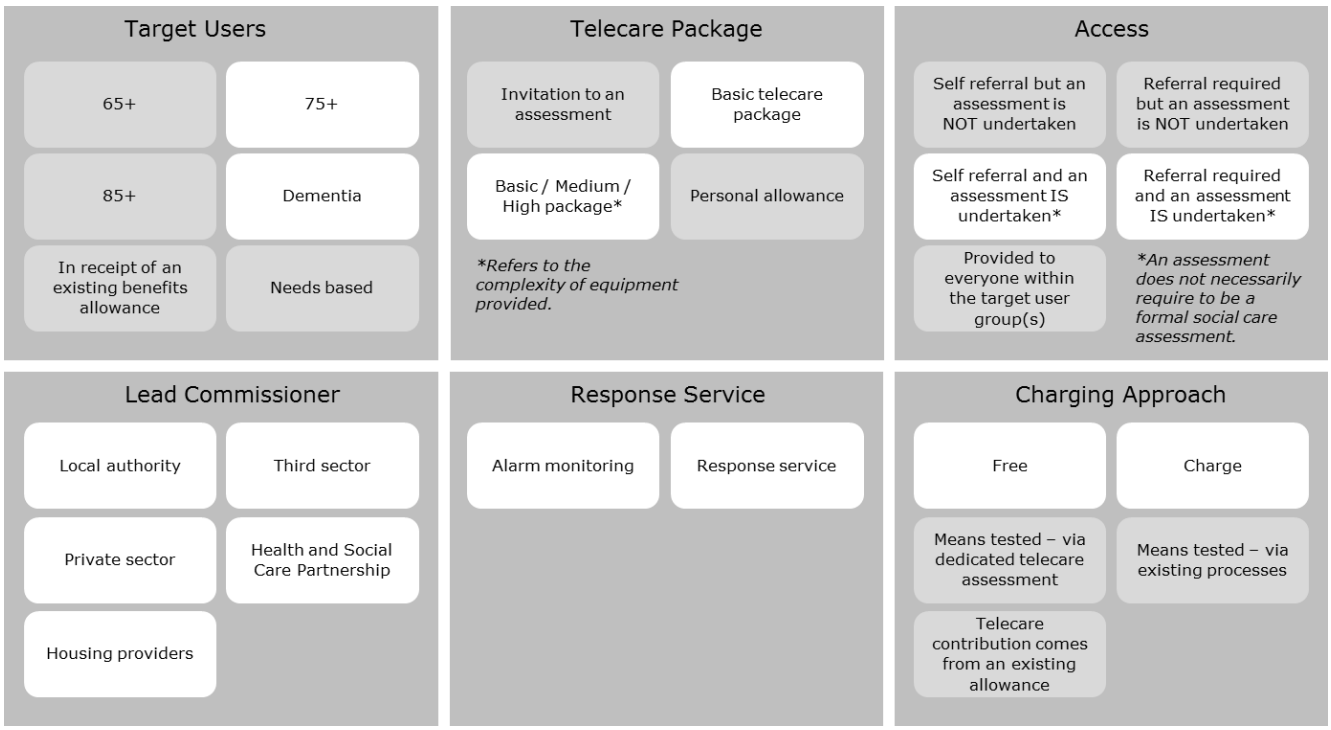


Figure 10: Universal Telecare Approach Service Characteristics

A summary of the key discussion points is provided below. Detailed pros and cons against each service characteristic is provided in Appendix B.

- **Target Users** – which cohort(s) should a universal approach target?
  - The greatest benefit would be delivered by targeting the 75+ cohort as the evidence shows this group has a high level of need (as discussed in section 3) and recent studies evidence the benefits of telecare amongst older people. However there is also increasing evidence relating to the benefits of telecare amongst dementia users, but it is usually most effective when introduced early after diagnosis of the condition.
  - Targeting only the 85+ cohort is less likely be effective as a preventative service given people are already likely to have complex care needs at this age.
  - Targeting only the 65+ cohort would be high risk from a cost perspective given the size of this cohort. However consideration could be given to targeting this cohort at a later date when the service is established and stable.
  - There is support for a needs based model, however concerns were expressed around the complexity of administering this service and the risks associated to controlling costs as it would be difficult to predict demand especially given the growth in the over 75 population.
- **Telecare Package** – what equipment should the user be provided with?
  - For many users it is important that assistive technology is personalised to the individual and not part of a 'set menu' or 'package'. Users can experience very different symptoms based on their condition that require different responses. However a personalised package would not necessarily have to the provided by a universal service. A basic package could potentially be 'topped up' by an existing Local Authority Service such as a route into the ARC or response service or via a private offering.
  - An approach that provides eligible users with a financial allowance, for example as part of Self Directed Support (SDS), to be used towards the cost of telecare equipment and/or telecare services could be complex to design and ensuring interoperability / maintenance of purchased equipment and contact centre systems would be difficult.

- An 'assessment only' approach whereby everyone within the target cohort is invited to self-refer for telecare when they become eligible (e.g. following a birthday or diagnosis of relevant need) would likely to lead to an additional bottleneck for assessments.

- **Access** – how will users access the service and how will their needs be determined?
  - Self-referral alongside the current formal referral route were both considered to be important to maximise the accessibility of the service.
  - Given the service provider has a duty of care, an assessment of need is important however this could be in the form of a social care assessment or it could be less formal such as by completion of a self-assessment form, during installation of the equipment or via a follow up call post installation of the equipment.

- **Lead Commissioner** – which organisation will have overall responsibility for the service?
  - Based on the current delivery model, integration authorities could continue to coordinate and oversee the delivery of a universal telecare service. However alternatives should be considered as it may be difficult to attain quality, equity and safety of service required and there may be advantages looking at alternative providers such as a social enterprise, third sector or private sector provider. For example it may be possible to reach a different set of users than would otherwise be possible as they are not perceived as being within the care system, there may be greater scope for innovation and there may be opportunities to deliver the service at a lower cost (some further delivery options are explored in section 5.4 below).

- **Response** – what response will be provided?
  - The recent study by Farrpoint highlighted that although call monitoring is very fragmented across Scotland with 22 Alarm Receiving Centres (ARCs) there is significant opportunity for rationalisation which could lead to a universal approach for call monitoring services. For example, NHS 24 could also be considered as an option to realise economies of scale and equity of service.
  - However given the geography of Scotland, a standard approach to 'on the ground' response is unlikely to be cost effective, timely or practical due to the maturity of the infrastructure in some areas and therefore alternative approaches must be considered to achieve equitable access. For example this could involve close collaborative working between a range of stakeholders from the emergency services, third sector, independent sector, relatives, neighbours and other unpaid carers to provide local 'on the ground' response services in areas with poor coverage. There are also private companies that provide a responder service, which could also be utilised. However the number of stakeholders involved illustrates how complex the provision and management of a prompt and adequate response can be and highlights the importance for a response service based on protocols and standards if a universal approach is to be considered.
  - Although call monitoring and response in the context of the wider health social care agenda is outside the scope of this study, it is recommended that a detailed evaluation of the options is undertaken. A number of health and social care services are dependent on a response service and therefore there will be significant opportunity for rationalisation and standardisation when considering telecare response in this wider context.

- **Charging Approach** – will users be charged?
  - If the service was free to the user, the potential take-up and subsequent benefits are likely to be high as there is scope to offer telecare free to all within the target cohort(s) who may benefit from it.
  - Charging provides a revenue stream that subsidises both the ongoing cost of telecare services, plus the up-front investment costs associated with its use and in some cases other services entirely. However depending on how charges are set, charges may deter some

users and impact the potential uptake. There would also be a cost associated to collecting the charge and debt recovery which would reduce the income received from charging.

Many of the decisions about what a universal approach means will be influenced by the costs and benefits. In the next section we have analysed a number of scenarios to provide an indicative view on costs and benefits. Based on the discussion points above, the following scenarios were identified for financial analysis.

Scenario	Sub Scenario	Target Users	Telecare Package	Access	Lead Commissioner	Response service	Charging Approach
1	a	75+	Basic / Medium / High Package	Self-referral or by referral and an assessment is undertaken. An assessment does not necessarily need to be a formal social care assessment.	The financial analysis in section 6 does not consider the financial implications of different lead commissioners.	A call monitoring and a response service based on a sample of existing Local Authority services has been included in the financial analysis in section 6 however it does not consider the financial implications for offering a wider health and social care response service.	For the purpose of this study, the funding implications if the service was free or if a charge is applied is assessed for each option.
	b	75+	Basic Package Only				
2	a	75+ & Dementia	Basic / Medium / High Package				
	b	75 + & Dementia	Basic Package Only				

Table 2: Shortlisted options for financial cost and benefits analysis

5.4 **Delivery / Commissioning**

Whilst there is a debate about what the right commissioning model should be, we believe there are three broad options for consideration to be taken forward in Scotland.

1. **Status Quo** - Local Authorities continue as the lead commissioners.
2. **Process Standardisation and Harmonisation** - Local Authorities/IJB's continue as the lead commissioners but with greater focus on working towards standardisation and harmonisation of processes.
3. **Single/Dual Provider Delivery Model** – this would involve either a single provider (3a) leading the entire service provision; or two providers (3b) involved in leading the service whereby users with more complex care needs would continue to access telecare from their Local Authority/IJB.

Option 1: Status Quo

IJBs and Local Authorities would continue to retain discretion as to whether to provide telecare services and the form of these services including policies, processes and standards. However, only

a few areas in Scotland have developed sustainable plans for maintaining telecare services with anecdotal evidence suggesting that many areas are struggling to make the case for investment - although it does represent the service that supports the most people. While it is anticipated telecare will still remain a central priority and some funding will be made available through other routes this is not guaranteed.

The affordability challenge faced by Local Authorities under the status quo could result in a stagnation in growth or even a fall in telecare use in Scotland and prevent an increase in uptake to levels that would deliver most benefit.

Option 2: Process Standardisation and Harmonisation

IJBs and Local Authorities would continue to lead telecare services with a greater focus on working collaboratively including a harmonisation or standardisation of policies and processes to drive greater quality and efficiency of service across the country. In particular IJBs would work together to address the issues of fragmentation identified in the Farrpoint report including multiple ARCs, variety of processes, equipment and telecare providers to create a coordinated and efficient approach to the analogue to digital telecare transition.

Local Authorities should work together to carry out a shared analysis of local needs, and use this as a basis to inform their plans to redesign process and standards. Common process and standards are based on good practice from elsewhere to overcome some of the barriers to telecare identified during this study – a number of areas in Scotland could provide such exemplars.

Under this option Local Authorities would still be required to develop sustainability plans for local investment or source funding from elsewhere.

Based on the findings of this study the following are key areas identified for review and potential re-design:

- Awareness - more needs to be done in raising awareness and knowledge building amongst the range of health and social care providers that service users may use and amongst family and carers. This may be simply general awareness raising strategies across the public such as up to date leaflets or ad campaigns however other approaches are also being adopted which could be rolled out wider:
    - encouraging and facilitating the promotion of telecare through partnerships with local community organisations and other public sector organisations e.g. Scottish Fire and Rescue Service and the Scottish Ambulance Service;
    - mandating that technology should always be considered as part of the protocols and procedures that exist within care organisations;
    - training of NHS staff and other professionals on the benefits of telecare and the referrals process;
    - showcasing of the telecare equipment, for example one Local Authority has set up a display of telecare equipment in GP surgeries to build awareness amongst the local community; and
    - improving links/relationship between telecare champions and dementia post diagnostic workers. In our consultation, there was mixed awareness about who the contact was for post diagnostic support in some areas.
- Marketing - look at more creative and innovative marketing approaches to help break the perception that telecare is an old person's service. For example, the 'wearability' of the equipment can be an issue for some people therefore providing more 'wearables' could help support change of current perceptions.
- Access – review how telecare is accessed, ensuring self-referral and self-assessment are available where it is appropriate to do so.

- Call monitoring - identify opportunities for appropriate shared service provision for ARCs, to rationalise provision, maximise efficiencies and improve standards.
- Response services - explore opportunities for collaborative working and development of standards between the emergency services, third sector, independent sector and other carers to provide local 'on the ground' response services in areas with poor coverage to ensure more equitable access.

Option 3: Single/Dual Provider Delivery Model

Whilst Option 2 goes some way to drive greater equity of services, the delivery model is still rooted in autonomous organisations making decisions and relies on Local Authorities being willing to work collaboratively and redesign their service in line with a common service approach. Therefore, it may be difficult to ensure that the inequity of the service is addressed in any meaningful way.

A further two options that entails a more radical redesign of the delivery model through shared services are identified for further consideration:

- Option 3a (Single Provider Model)- this would involve an IJB, third party or social enterprise leading the service on behalf of all IJBs to provide telecare services to all users within the target cohort(s).
- Option 3b (Dual Provider Model)- similar to option 3a, however users with more complex care needs which require access to a wider package of care would continue to access telecare from their Local Authority/IJB.

Any decisions on how to deliver telecare services should be made within the context of widespread recognition that the current health and social care models are unsustainable and new approaches to delivering health and social care services are needed. This provides an opportunity to consider a redesign of telecare within the wider health and social care reform agenda with a greater central / national coordination.

It is important to note that any redesign of telecare provision should not be undertaken in isolation of telehealth. An integrated approach to the delivery of telecare and telehealth services presents opportunities to embed standardisation across a number of areas such as a common technology platform, funding arrangements, charging and service access.

5.5 Legal, ethical and political considerations

Applicable to all options, the use of telecare has legal, ethical and political considerations, some of which may also be subject to change as technology advances. These issues may influence what is possible and acceptable for a universal approach to telecare. Specific issues highlighted during the stakeholder engagement include:

- **The public perception of a universal approach.** The public may perceive a universal approach as a political way of cutting back on care services and reducing human contact with service users. There may also be a perception that it should be free if telecare is seeking to remove need for health and social care services which the public would otherwise not have to pay for. However irrespective of approach, it is evident from the stakeholder engagement that awareness and education of telecare needs to be addressed to ensure those who could benefit from it fully understand what it is and the associated benefits.
- **Concerns that telecare may be provided to users without the request or consent of the service user.** This can be particularly relevant when telecare is used to support individuals with mental health conditions such as dementia. However the approach to gaining consent may vary depending on the user's individual circumstances.

- **The robustness of the telecare equipment and who has the legal responsibility for ensuring the equipment is properly maintained.** Based on existing arrangements, Local Authorities are legally required to maintain equipment however consideration would need to be given to which organisation would be accountable based on a universal approach and the quality standards that would apply.
- **Legal and ethical concerns about the use of telecare equipment that rely on sharing and storing information and the need to ensure information remains confidential and is not misused**. Given the increasing volume of data that telecare equipment generates, a universal approach would need to adopt agreed standards and protocols for information security and data sharing. Users should have clarity about the purpose of the information that will be generated from telecare equipment and how it will be used.

It is critical that the above considerations are explored further and addressed as part of the design of any further work.

6 Financial Cost and Benefits Analysis

6.1 Introduction

Despite the focus in recent years to improve the accessibility of telecare, it was widely acknowledged during the stakeholder engagement that there is still scope to further improve take-up across all Local Authorities/IJBs. However concerns were raised about not being able to quantify the financial costs and benefits of increasing telecare usage. Therefore before recommending the case for increasing telecare take-up, it was important to understand what the indicative cost and benefit would be.

This section estimates the costs and benefits of increasing take-up based on the scenarios identified in section 5. Supporting information relating to the assumptions, calculations and sources of data is provided in the appendices.

6.2 Target Uptake

Records are not kept for unmet need therefore it was necessary to estimate a target based on likely need for telecare. During consultation it was recognised that the current take-up rate was not commensurate with need across Scotland. Some Local Authorities have high take-up rates while others have much lower take-up rates. Overall the national take-up rate for the 75+ cohort is 20% and at a Local Authority level this ranges between 10% and 35%.

The calculation of a target uptake is based on the following approach:

- East Renfrewshire is considered to be an exemplar service in terms of processes, standards and uptake, albeit it was recognised that there is still scope to further improve (an overview of the East Renfrewshire telecare service is provided in Appendix C);
- Based on this we calculated a target uptake for each Local Authority. In more deprived areas a higher target was set and in less deprived areas a lower target was set based on data from the Scottish Patients at Risk of Readmission and Admission (SPARRA) tool (see Appendix C for further details).
- Recognising that all Local Authorities, including East Renfrewshire, are aiming to become a more proactive service, the analysis considers the impact of a 10% and 20% uplift on the SPARRA calculations.

Figure 11 shows proposed national targets by Local Authority for the 75+ cohort based on the above analysis. This shows that across all local authorities there is currently unmet need for telecare based on national target update rates of between 34% and 44% of the 75+ cohort population.

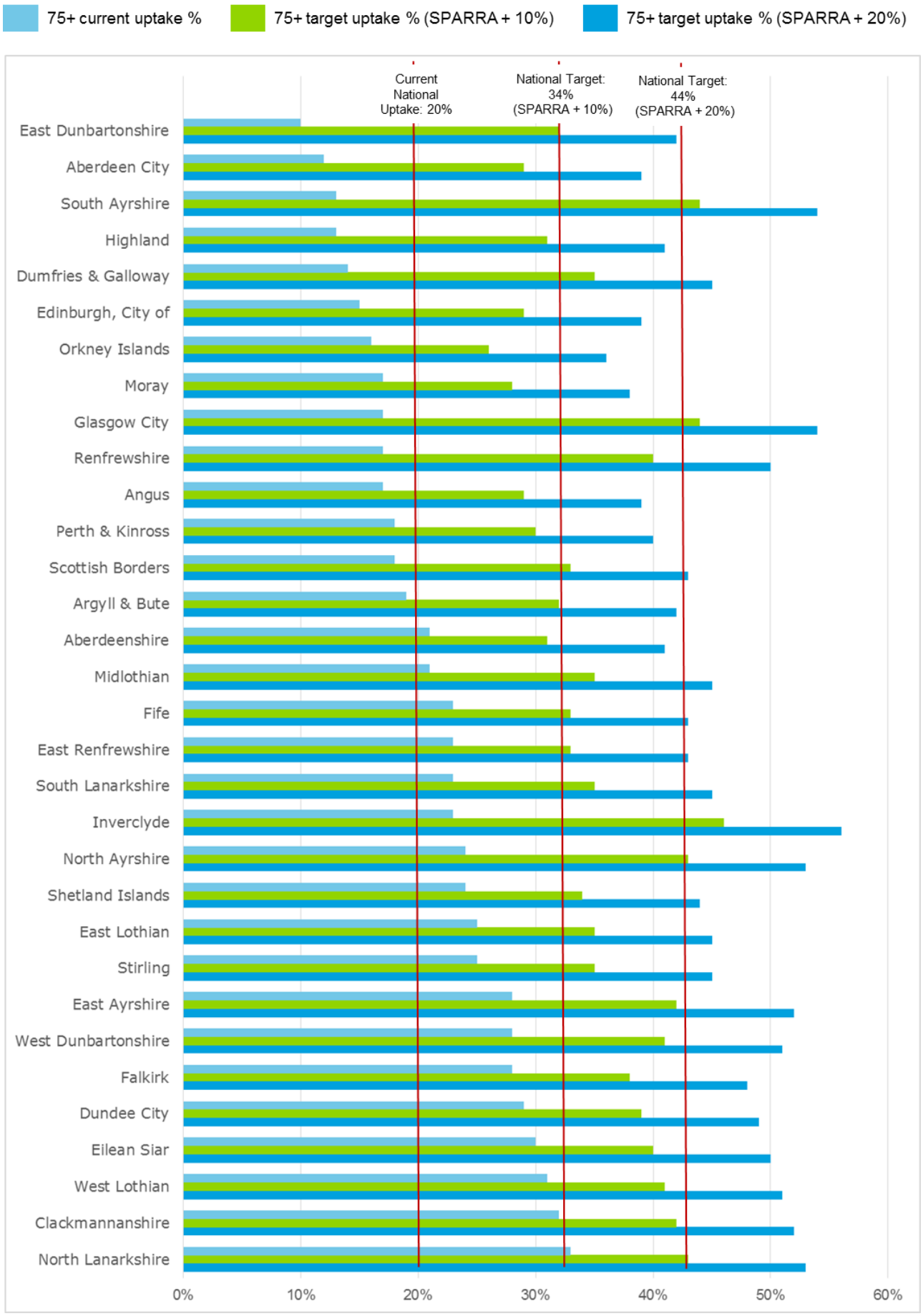


Figure 11: Current and target uptake target % within the 75+ cohort

6.3 Uptake scenarios and associated costs and benefits

As set out in section 5, two telecare uptake scenarios for financial analysis were identified as shown in the tables below:

- Scenario 1 considers the costs and benefits associated with focusing effort on increasing the national take-up within the 75+ cohort to 34% (82-91k new users); and
- Scenario 2 considers the costs and benefits associated with focusing effort on increasing the national take-up within the 75+ cohort to 44% (130k-139k new users).

The high level costs and benefits are shown in the figures below each table.

Scenario 1: Increase national uptake from 20% to 34% within the 75+ cohort

Sub scenario	Target cohorts	Total number of new users	Package provided
a	75+ Only	82,152	Basic / Medium / High[1]
b			Basic Only[2]
c	75+ and Dementia	90,854	Basic / Medium / High
d			Basic Only

Table 3: Scenario 1 for cost and benefits analysis

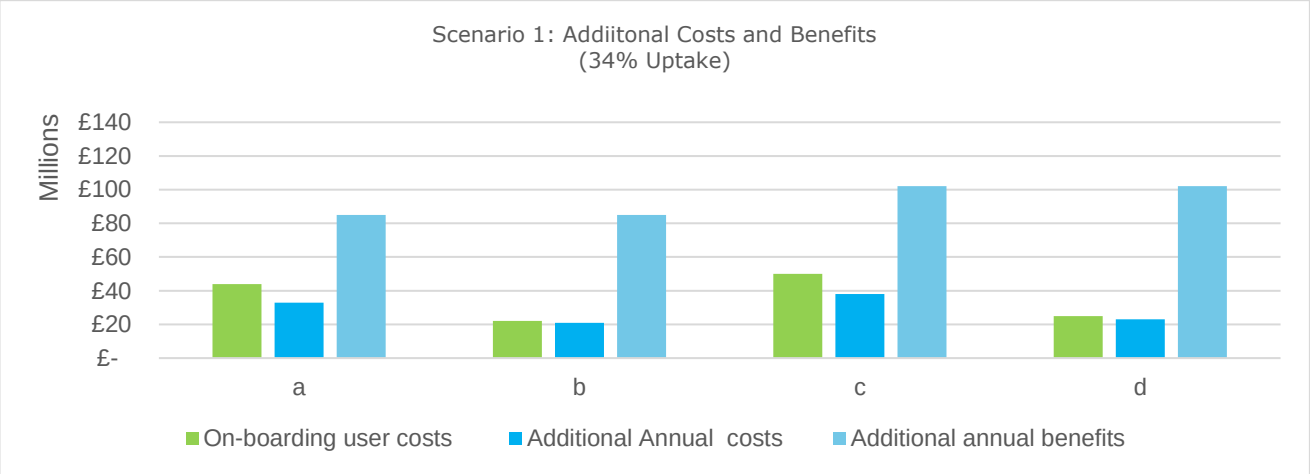


Figure 12: Scenario 1 Cost and Benefits Analysis

Scenario 2: Increase national uptake from 20% to 44% within the 75+ cohort

Sub scenario	Target cohorts	Total number of new users	Package provided*
a	75+ Only	130,507	Basic / Medium / High
b			Basic Only
c	75+ and Dementia	139,209	Basic / Medium / High
d			Basic Only

Table 4: Scenario 2 for cost and benefits analysis

[1] A package is provided to the user aligned to the complexity of their needs. The Medium and High packages would involve additional and/or more advanced equipment compared to the Basic package.

[2] A blanket basic package is provided regardless of need. For example this could comprise of a base unit, pendent and smoke detector. The specific equipment to be provided requires detailed analysis.

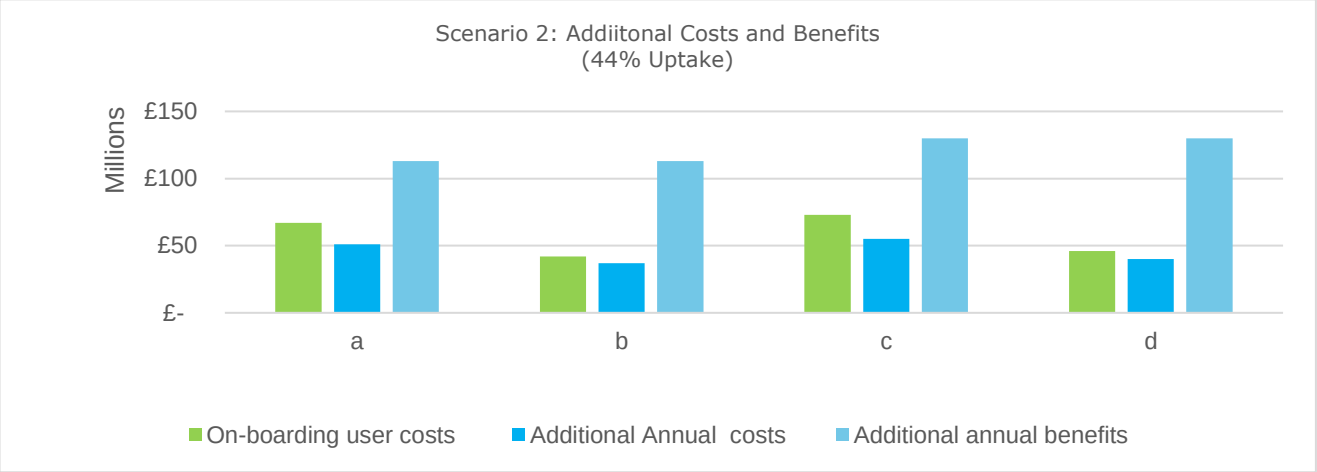


Figure 13: Scenario 2 Cost and Benefits Analysis

The remainder of this section details the underlying costs, benefits and assumptions used to calculate each scenario.

6.4 Estimated Costs

The cost estimates are based on a range of assumptions described below. Source information for the assumptions is provided in Appendix D. It should be noted that the costs outlined in this section are indicative and should be tailored to local circumstances when developing local business cases for telecare provision.

Telecare Package

Table 5 shows the telecare package costs used in the analysis. The supporting assumptions are described below the table.

	Basic		Medium		High	
	On-boarding cost per user[3]	Annual cost per user	On-boarding cost per user[3]	Annual cost per user	On-boarding cost per user[3]	Annual cost per user
Equipment	£139	-	£209	-	£279	-
Installation and Removal	£185	-	£278	-	£370	-
Equipment Maintenance	-	£100	-	£150	-	£200

Table 5: Telecare package costs

- Equipment:
  - The Basic package equipment is assumed to comprise of a base unit, pendant and smoke detector. This was agreed at a workshop attended by a subset of the telecare leads based on typical basic packages currently provided by Local Authorities (albeit not all Local Authorities provide this as standard). However it should be recognised that telecare technology is constantly advancing and it is likely that the equipment provided under all packages will look very different in the future as new technologies emerge.
  - The Basic package equipment costs are an average of the most commonly purchased equipment and are taken from the list prices from the Scotland Excel Framework.

[3] Includes procurement of telecare equipment and installation/removal costs

  - A 50% uplift of the Basic package equipment cost has been applied to calculate the Medium package equipment costs.
  - A 100% uplift of the Basic package equipment cost has been used to calculate the High package equipment costs.
- Installation and Removal:
  - A range of private provider costs and costs detailed in relevant studies has been used to calculate an average cost for the Basic package.
  - A 50% uplift of the Basic package costs has been applied to calculate the Medium package costs.
  - A 100% uplift of the Basic package costs has been applied to calculate the High package costs.
- Equipment Maintenance:
  - Basic package costs are based on estimates provided at a workshop attended by a subset of telecare leads.
  - A 50% uplift of the Basic package costs has been applied to calculate the Medium package costs.
  - A 100% uplift of the Basic package costs has been applied to calculate the High package costs.

Future Technology Costs:

  - The future costs of technology has not been factored into the cost analysis. However Deloitte research[32] shows that there has been a consistent trend over the past two decades of technology costs decreasing in almost all technology sectors therefore the technology related costs may be lower in reality and should be revisited as part of any future study or business case.

- Package Uptake:
  - For the scenarios where multiple packaged are offered, 80% of users will receive a Basic package, 15% of users will receive a Medium package and 5% of users will receive a High package.

Access Costs

- An average cost of £100 per user has been applied to the analysis. Access costs include how the user's needs are determined. The costs have been sourced from an existing Local Authority's model for needs assessment which includes a combination of self-referral / self-assessment and social care assessment.

Lead Commissioner

- The analysis does not consider the financial implications of different lead commissioners. However, any further conclusions in this regard along with the financial impact is a key area for further investigation if a universal approach is taken forward for further consideration.

Response

- The cost estimates in Table 6 are an average of a sample of current Local Authority response models.

Cost	Annual cost per user
Call Handling /Monitoring	£155

On the ground response service	£89

Table 6: Response costs

- The analysis does not consider the financial implications for offering a wider health and social care response service nor does it include potential efficiencies that could be achieved from consolidating existing ARCs.
- The costs are based on a national 'on the ground response' response however given the geography of Scotland, a standard approach to 'on the ground' response may not be practical due to the maturity of the infrastructure in some areas.
- Response service costs are based on costs incurred by one large Local Authority.

6.5 Estimated Benefits

The majority of benefits will be realised through avoided costs through an evidenced reduction or delay in alternative care packages. Benefits have been sourced from stakeholder interviews and relevant academic research from 2011 –2016. The studies referenced did not target specifically the 75+ cohort although these studies generally focussed on older age groups. Please refer to Appendix D for details of sources.

The main benefit categories included in the analysis are:

- Reduced Care Home Bed Days;
- Reduced NHS Hospital Bed Days;
- Reduced NHS Hospital Delayed Discharges Bed Days;
- Reduced NHS Hospital Overnight Stays;
- Reduced Ambulance Call Outs;
- Reduced Home Care

Research also shows that increasing telecare uptake may lead to greater demand for GP services given people are living in their homes for longer and therefore may not receive primary care via a hospital or a care home setting. However, this should be considered within the wider context of national strategic aim to allow people to stay in their homes for longer (2020 Vision for Health and Social Care.) For each benefit category a scale of potential benefit was identified by examining multiple sources. The medium source has been applied to the analysis.

Table 7 shows the benefits that have been sourced against each benefit category and applied to the analysis. For example, 2.48 bed days saved per user (medium estimation).

Benefit category	Unit	General Telecare Study Benefits (annual benefit per user)			Dementia Study Benefits (annual benefit per user)		
		Low	Medium	High	Low	Medium	High
Reduced Care Home Bed Days	Care Home Bed Days	1.24	2.48	3.72	6.30	12.60	18.90
Reduced NHS Hospital Bed Days	NHS Hospital Bed Days	0.19	0.37	0.56	0.42	0.83	1.25
Reduced NHS Hospital Delayed Discharges	NHS Hospital Bed Days	0.06	0.12	0.19	0.38	0.76	1.15
Reduced NHS Hospital Overnight Stays	Sleep Over Nights	0.11	0.22	0.33	0.68	1.37	2.05
Reduced Ambulance Call Outs	Ambulance Callouts	0.61	1.21	1.82	0.61	1.21	1.82
Reduced Home Care Visits	Home Care Visit	1.01	2.02	3.03	1.01	2.02	3.03
Increase demand on GPs	GP Visits	-0.09	-0.18	-0.27	-0.09	-0.18	-0.27

Table 7: Telecare benefits based on stakeholder interviews and relevant academic research from 2011 –2016

The table illustrates expected average annual benefits per user for those over 75 and also those with dementia. It was estimated that benefits for the dementia population were on average higher across most benefit categories.

The unit cost associated to each benefit category is shown below in Table 8.[33]

Unit Type	Cost per unit	Source
Care Home Bed Day [4]	£89	Scotland Excel Framework
NHS Hospital Bed Day	£382	Personal Social Services Research Unit (PSSRU) 2016
Sleep Over Night	£91	Personal Social Services Research Unit (PSSRU) 2016
Ambulance Callout	£98	Personal Social Services Research Unit (PSSRU) 2016
Home Care Visit	£10	Newhaven Research 2011
GP Visit	£49	Personal Social Services Research Unit (PSSRU) 2016

Table 8: Benefits unit costs

N.B. PSSRU publishes widely recognised unit costs for health and social care services in England. Their latest publication was used to source the majority of health and social care costs as an equivalent is not currently available in Scotland. The Scotland Excel Framework was used to establish the Care Home Bed Day cost.

6.6 Current Cost/Benefit Analysis

The same assumptions used to calculate Scenario 1c & 2c costs and benefits (75+ and dementia users / High, Medium and Low package provision) have been applied to estimate the current costs for providing telecare to the 75+ cohort at the existing take-up levels (20% average uptake across Scotland in 2016). This provides a baseline against which the scenarios can be evaluated as shown in Table 9.

Based on the analysis, it is estimated Local Authorities spend around £39m per annum to provide telecare to 20% of people within the 75+ cohort nationally. However a small proportion of this cost is funded through TEC Programme investment in a minority of areas. Based on our analysis we estimate this generates benefits of around £99m per annum to the Scottish public sector.

It is important to note that these benefits are defined as cash avoidance as they primarily relate to the prevention of care home or hospital visits. This provides an opportunity for these bodies to be more able to fund the current and increasing demand for services with their existing/reducing budgets. Around two thirds of these benefits accrue to the social care sector and the remainder to the NHS:

- 53% of benefits relate to reductions in care home bed days;
- 34% of benefits relate to reductions in hospital bed days;
- 10% of benefits relate to reductions in ambulance call outs; and
- 3% of benefits relate to a reduction in care visits.

Based on population forecast data from National Records of Scotland, it is estimated that there will be a 10% increase in the population aged 75 and over in Scotland by 2020. Therefore to maintain current uptake levels it is estimated that an additional £3m per annum will be required by 2020 (in addition to any new funding required to cover funding shortfalls when the current Programme investment ends) based on the current cost of technology.

[4] Cost is comprised of an average of residential care with nursing and residential care without nursing sourced from the Scotland Excel programme.

	National Uptake		Estimated Costs		Estimated Annual Benefits						Per User Summary		
Year	Current uptake % of users aged 75+	Total number of new users	On-boarding user costs	Annual costs	Care home benefits	NHS hospitals	Ambulance Service	Home care checks	Increase GP demand	Total benefits	Average annual benefit per user	Average on-boarding costs per user	Average annual cost per user
2016	20%	0	£51m	£39m	£52m	£35m	£11m	£2m	-£1m	£99m	£966	£566	£427
2020	20%	9,611	£56m	£42m	£58m	£40m	£12m	£2m	-£1m	£111m	£1,148	£568	£428

Table 9: Current and future estimated cost and benefits of providing telecare to the 75+ cohort

6.7 Cost and Benefits Analysis Summary

Scenario 1: Increase national uptake from 20% to 34% within the 75+ cohort

Table 10 summarises the estimated costs and benefits for scenario 1 based on the above assumptions and a 10% uplift on the needs adjusted uptake targets.

	National Uptake		Additional Estimated Costs		Estimate Additional Annual Benefits						Per User Summary		
Sub scenario	Target uptake % of users aged 75+	Total number of new users	On-boarding user costs	Additional Annual costs	Care home benefits	NHS hospitals	Ambulance Service	Home care checks	Increase GP demand	Total benefits	Average annual benefit per user	Average on-boarding costs per user	Average annual cost per user
a	34%	82,152	£44m	£33m	£44m	£31m	£9m	£2m	-£1m	£85m	£1,081	£557	£421
b			£22m	£21m								£424	£344
c		90,854	£50m	£38m	£54m	£37m	£10m	£2m	-£1m	£102m	£1,125	£564	£426
d			£25m	£23m								£424	£434

Table 10: Scenario 1 cost and benefits summary

Scenario 2: Increase national uptake from 20% to 44% within the 75+ cohort

Table 11 summarises the estimated costs and benefits for scenario 2 based on the above assumptions and a 20% uplift on the needs adjusted uptake targets.

	National Uptake		Additional Estimated Costs		Estimate Additional Annual Benefits						Per User Summary		
Sub scenario	Target uptake % of users aged 75+	Total number of new users	On-boarding user costs	Additional Annual costs	Care home benefits	NHS hospitals	Ambulance Service	Home care checks	Increase GP demand	Total benefits	Average annual benefit per user	Average on-boarding costs per user	Average annual cost per user
a	44%	130,507	£67m	£51m	£55m	£41m	£15m	£3m	-£1m	£113m	£956	£536	£409
b			£42m	£37m								£424	£344
c		139,209	£73m	£55m	£65m	£47m	£16m	£3m	-£1m	£130m	£995	£543	£413
d			£46m	£40m								£424	£344

Table 11: Scenario 2 cost and benefits summary

The main findings of the cost and benefit analysis are set out below:

- To increase take-up to 34% within the 75+ cohort would cost an additional £33m to £38m per annum (based on Scenario 1a and 1c), delivering additional non-cash releasing annual benefit of between £85m and £102m.

- To increase take-up to 44% within the 75+ cohort would cost an additional £51m to £55m per annum (based on Scenario 2a and 2c), delivering additional largely non-cash releasing annual benefit of between £113m and £130m.
- The analysis shows that turnover of users has an important impact on the benefit to cost ratio of investment as follows:
  - Users on the service for 1 year provides an overall benefit to cost ratio of around 1.2:1
  - Users on the service for 2 years provides an overall benefit to cost ratio of around 1.6:1
  - Users on the service for 3 year provides an overall benefit to cost ratio of around 1.8:1
- The above ratios assume that equipment is not re-used as anecdotal evidence suggests that a proportion of equipment is never recovered by the Local Authorities. However, if equipment can routinely be re-used through improved asset management, the above ratios will improve bases on the current cost of technology.
- The benefits calculations are based on the 'Medium' benefit assumptions from Table 7 above. If the 'High' benefit assumptions are applied, then a 1.8:1 benefit to cost ratio is achieved for users on the service from 1 year.
- Under current arrangements, investment would be met by Local Authority/IJB social care budgets despite many of the benefits being realised within other health and social care organisations. However HSCPs provide an opportunity to pool budgets for funding integrated services. HSCPs should use the results of this type of study to help make more robust cases for investment.
- The above estimates do not factor in any funding shortfall which may exist if central investment funding ends.

Analysis Limitations:

- The cost estimates are based on current prices and VAT has not been included.
- The timeframe over which benefits would be realised has not been factored into the analysis however it should be noted that these benefits would be achieved incrementally over a period of time before the full recurring annual benefit is reached.
- The set-up / implementation costs of a universal approach has not been included in the cost analysis. This would result in a further overhead, particularly around implementing a universal response service.

Importantly, it has been assumed that benefits would continue to accrue in linear fashion as take-up rates increase. However, it is recognised that a saturation point may exist where increasing take-up beyond a certain point will result in no additional benefit. It has been assumed that this saturation point would occur once take-up rates exceed the suggested take-up target.

6.8 User Charging Options

This section presents options for user charging. The charges set out are for the annual costs and do not take into consideration the on-boarding user costs.

Table 12 describes the User Charging (UC) options considered.

Option	Charge type	Applicable to:
UC1	**Nominal Fee**	Medium and High package users only. Users receiving a Basic package would receive the service for free.

UC2	• A weekly charge of £3.67 has been used in the analysis based on the current average charge that is applied across Scotland. This represents a small contribution to the total cost of the service.	All users irrespective of package type would pay a weekly charge.
UC3	**Full Recovery** • A charge is set that ensures the total costs of the service are met by user charging. • This level of weekly cost required could be a significant barrier to access and affordability, putting people off telecare rather than promoting it. • The weekly costs are based on target uptake being hit. Weekly costs would be higher if the actual uptake is lower than target.	Medium and High package users only. Users receiving a Basic package would receive the service for free.
UC4		All users irrespective of package type would pay a weekly charge.

Table 12: User Charging (UC) options

UC1: Nominal Fee (only Medium and High users pay)

Table 13 shows the charging profile for UC1 alongside the estimated funding shortfall. The user charges recovered would account for between 18% and 20% of the total annual costs under Scenario 1a and 2a.

	Weekly Charges			Scenario 1: Target (SPARRA + 10%)			Scenario 2 Target (SPARRA + 20%)		
Sub Scenario	Basic package weekly charge	Medium package weekly charge	High package weekly charge	Total annual cost to provide service	Total income via charging (less bad debt)	Annual funding shortfall	Total annual cost to provide service	Total income via charging (less bad debt)	Annual funding shortfall
a	Free	£3.67	£3.67	£72m	£14m	£58m	£90m	£16m	£74m
b	Free	N/A	N/A	£59m	£0	£59m	£76m	£0	£76m
c	Free	£3.67	£3.67	£77m	£16m	£61m	£94m	£17m	£77m
d	Free	N/A	N/A	£62m	£0	£62m	£79m	£0	£79m

Table 13: UC1: Nominal Fee (only Medium and High users pay)

UC2: Nominal Fee (all users pay)

Table 14 shows the charging profile for UC2 alongside the estimated funding shortfall. The user charges recovered would account for between 40% and 50% of the total annual costs however this assumes full recovery of the charges from all users.

	Weekly Charges			Scenario 1: Target (SPARRA + 10%)			Scenario 2 Target (SPARRA + 20%)		
Sub Scenario	Basic package weekly charge	Medium package weekly charge	High package weekly charge	Total annual cost to provide service	Total income via charging (less bad debt)	Annual funding shortfall	Total annual cost to provide service	Total income via charging (less bad debt)	Annual funding shortfall
a	£3.67	£3.67	£3.67	£72m	£30m	£42m	£90m	£38m	£52m
b	£3.67	N/A	N/A	£59m	£30m	£29m	£76m	£38m	£38m
c	£3.67	£3.67	£3.67	£77m	£31m	£46m	£94m	£39m	£55m
d	£3.67	N/A	N/A	£62m	£31m	£31m	£79m	£39m	£40m

Table 14: UC2: Nominal Fee (all users pay)

UC3: Full Recovery (only Medium and High users pay)

Table 15 shows the charging profile for UC3 alongside the estimated funding shortfall. The user charges recovered would account for 100% of the total annual costs under sub scenarios a and c however it is recognised that the weekly charges required to fully recover the annual running costs are highly unrealistic and would not be affordable to the vast majority of users (between £18 and £19 per week).

	Weekly Charges			Scenario 1: Target (SPARRA + 10%)			Scenario 2 Target (SPARRA + 20%)		
Sub Scenario	Basic package weekly charge	Medium package weekly charge	High package weekly charge	Total annual cost to provide service	Total income via charging (less bad debt)	Annual funding shortfall	Total annual cost to provide service	Total income via charging (less bad debt)	Annual funding shortfall
a	Free	18.60	£18.60	£72m	£72m	£0	£90m	£90m	£0
b	Free	N/A	N/A	£59m	£0	£59m	£76m	£0m	£76m
c	Free	£18	£18	£77m	£77m	£0	£94m	£94m	£0
d	Free	N/A	N/A	£62m	£0	£62m	£79m	£0	£79m

Table 15: UC3: Full Recovery (only Medium and High users pay)

UC4: Full Recovery (all users pay)

Table 16 shows the charging profile for UC4. The user charges recovered would account for 100% of the total annual costs under all scenarios however this assumes full recovery of the charges from all users. The weekly charge ranges between £7.40 and £9.10 – based on 2016 charges applied, this is up to £2 more expensive than the Local Authority with the current highest weekly charge.

	Weekly Charges			Scenario 1: Target (SPARRA + 10%)			Scenario 2 Target (SPARRA + 20%)		
Scenario	Basic package weekly charge	Medium package weekly charge	High package weekly charge	Total annual cost to provide service	Total income via charging (less bad debt)	Annual funding shortfall	Total annual cost to provide service	Total income via charging (less bad debt)	Annual funding shortfall
a	£9	£9	£9	£72m	£72m	£0	£90m	£72m	£0
B	£7.40	N/A	N/A	£59m	£59m	£0	£76m	£59m	£0
c	£9.10	£9.10	£9.10	£77m	£77m	£0	£94m	£77m	£0
d	£7.40	N/A	M/A	£62m	£62m	£0	£79m	£62m	£0

Table 16: UC4: Full Recovery (all users pay)

The above analysis shows that a full recovery approach is unrealistic given it would not be affordable for many users. However further consideration should be given to charging a nominal fee to part recover the annual costs to help minimise the need to reallocate funds from elsewhere in the public sector. However this may deter some users and impact potential take-up rates as evidence shows charging is a key barrier for many users under current service models.

7 Conclusions

7.1 Summary Findings

There has been improvements in telecare uptake over the past few years, achieved by targeted TEC investment and by local investment decisions to prioritise telecare. Local Authorities/IJBs ultimately retain discretion as to whether to provide telecare services and the form of these services including policies, processes and standards. Whilst there is activity underway across many Local Authorities to increase telecare uptake, there remains a significant variation in provision across Scotland and inequality of service.

The study concludes the following:

Context

- The past few decades have seen significant improvements in life expectancy. The number of people aged 75 and over in Scotland is projected to increase by around 29 per cent over the next ten years and by 85 per cent over a 25 year period.
- Greater longevity has brought an increase in multiple long-term conditions and frailty; along with a corresponding increase in dependence on health and social care services. People over 75 are admitted as emergencies at a rate of 361 per thousand (equating to over 156,000 emergency admissions per annum – this figure has been steadily rising year-on-year). Reducing admissions and facilitating speedier discharge remains a priority – and there are a number of recognised preventative approaches that are ready to be standardised across the country. One such approach is the use of telecare.
- The TEC Programme recently undertook a feasibility study to understand the scope and benefits of switching current telecare provision from a predominantly analogue based system (i.e. through traditional telephony connections) to a digital service. The study highlighted that the telecare landscape in Scotland is very fragmented. There are 22 Alarm Receiving Centres (ARCs) delivering telecare solutions for, or on behalf of, Scottish public bodies, a wide range of telecare providers and a range of equipment being used. Given Local Authorities are starting from different positions poses a number of challenges in moving to a universal approach for delivering telecare services.
- Technology can help to support new ways of working and help address many of the issues but it is not a 'silver bullet' and must be considered alongside wider health and social care transformation.

Telecare Uptake

- Based on an analysis of national uptake, around 1 in 5 of people aged 75+ are in receipt of telecare. However, we estimate that within this cohort at least one third could potentially benefit from telecare, with this rate higher in more deprived communities. This is backed up by anecdotal evidence and expert opinion.
- There is an opportunity to improve uptake across all Local Authorities/IJBs, particularly in areas where the current uptake is significantly below the proposed national target. However there are multiple barriers that are currently limiting uptake which would need to be overcome including:
    - Perception - the way in which telecare is presented may have an influence on acceptance. Often telecare is seen as something that people get when they cannot manage or cope on their own, or that is associated with a disability or simply old age.

- Awareness - many authorities reported that awareness of the service was a key barrier to increasing uptake amongst staff and wider public awareness. More needs to be done in raising awareness and knowledge building amongst the range of health and social care providers that service users may use and amongst family and carers.
- Cost - a combination of affordability issues for some while for others it may be a perception that it does not represent value for money for the service user.
- Response - in many areas users are dependent on volunteers (e.g. friends and family) acting as nominated key-holders to provide a response service which is often a barrier for those people who have a limited support network.

- Connectivity is not a current barrier, however in the future as the use of digital telecare devices increases, connectivity may become an issue due to limited mobile phone reception and broadband in some areas particularly in rural communities.
- If uptake is to increase then each of the above barriers must be addressed and more innovative approaches may need to be considered.

Universal Approach

- The question of what a universal approach means was discussed as part of the stakeholder engagement. Through these discussions, a number of service characteristics were identified which collectively describe what a universal approach could look like in the future.
- The service characteristics reviewed with stakeholders are shown in Figure 14. A number of the characteristics were taken forward for costs and benefits analysis – these are highlighted in white.

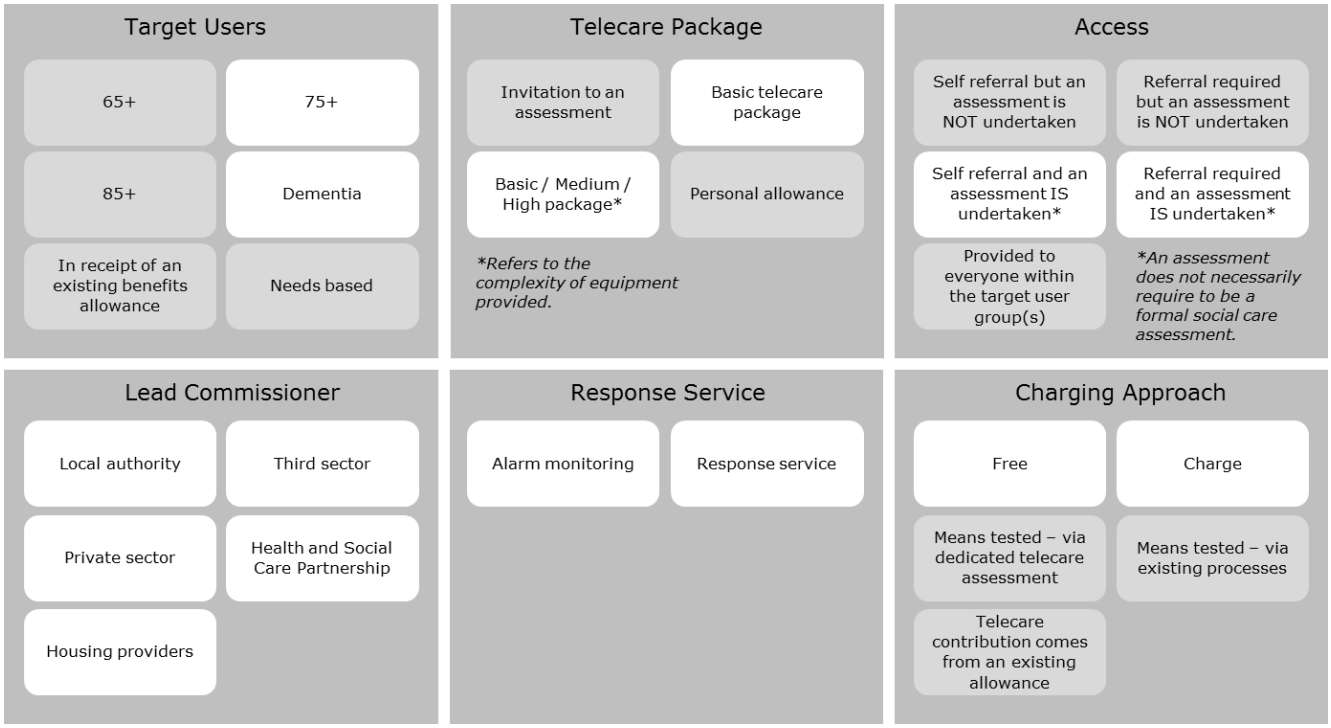


Figure 14: Universal Telecare Approach Service Characteristics

Cost and Benefit Analysis

- Based on the analysis, it is estimated Local Authorities spend around £39m per annum to provide telecare to 20% of people within the 75+ cohort nationally. Based on our analysis we estimate this generates benefits of around £99m per annum to the Scottish public sector. Around two thirds of benefits accrue to the social care sector and the remainder to NHS Scotland.

- The analysis shows that turnover of users has an important impact on the benefit to cost ratio of investment as follows:
  - Users on the service for 1 year provides an overall benefit to cost ratio of around 1.2:1
  - Users on the service for 2 years provides an overall benefit to cost ratio of around 1.6:1
  - Users on the service for 3 year provides an overall benefit to cost ratio of around 1.8:1
- It is important to note that these benefits are largely not cash releasing but primarily relate to the prevention of care home or hospital visits. Around two thirds of these benefits accrue to the social care sector and the remainder to the NHS:
  - 53% of benefits relate to reductions in care home bed days;
  - 34% of benefits relate to reductions in hospital bed days;
  - 10% of benefits relate to reductions in ambulance call outs; and
  - 3% of benefits relate to a reduction in home care visits.

Figure 15 shows the indicative annual costs and benefits if the national telecare uptake amongst the 75+ cohort was to increase to 34% and 44% and the impact of including dementia users (irrespective of age) in a national approach.

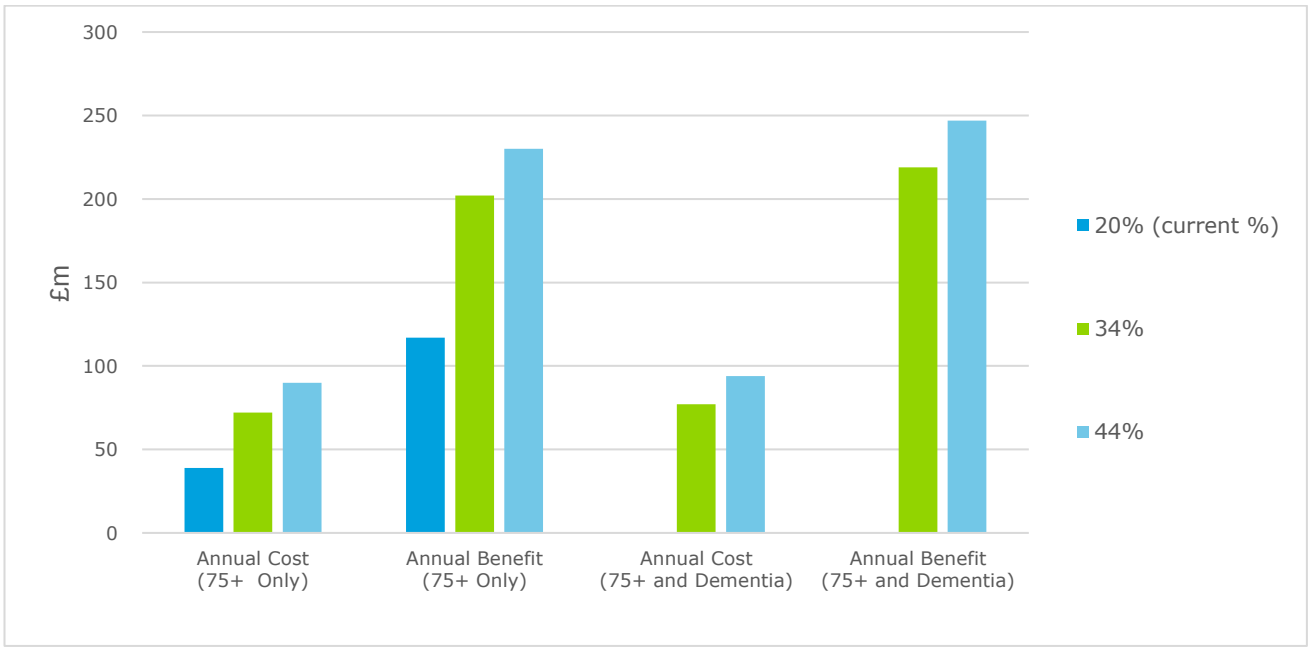


Figure 15: Cost and Benefits of increasing telecare uptake

- Under current arrangements, investment would be met by Integrated Joint Board's (IJB) social care budgets despite many of the benefits being realised within other health and social care organisations. A key challenge to IJBs when making additional investment cases for telecare is that these relate to benefits that are largely non cash releasing.
- IJBs are in varying states of readiness to make a sustainability case for continued funding. Whilst it is expected that Scottish Government and most IJBs will continue to see the provision of telecare as an important component of providing health and social care services, it will be competing against other key priorities for funding. Therefore, it should not be assumed that the current 'status quo' and levels of take-up will continue unless there is continued focus and investment from all parties.

Delivery / Commissioning Options

- Whist a universal approach would deliver benefit (both monetary and qualitative) by increasing the number of people in receipt of telecare, further consideration is needed on the most effective

way forward to achieve this. This study has identified three broad options for consideration to be taken forward in Scotland.

- **Option 1: Status Quo** – IJBs and Local Authorities would continue to retain discretion as to whether to provide telecare services and the form of these services including policies, processes and standards. The affordability challenge faced by Local Authorities under the status quo could result in a stagnation in growth, or even a fall in telecare use in Scotland and prevent an increase in uptake to levels that would deliver most benefit.
- **Option 2: Process Standardisation and Harmonisation** – IJBs and Local Authorities would continue to lead telecare services with a greater focus on working collaboratively including a harmonisation or standardisation of policies and processes to drive greater quality and efficiency of service across the country. In particular IJBs would work together to address the issues of fragmentation identified in the Farrpoint report including multiple ARCs, variety of processes, equipment and telecare providers to create a coordinated and efficient approach to the analogue to digital telecare transition.
- **Option 3: Single/Dual Provider Delivery Model** - it may be difficult to attain the quality, equity and safety of service required under options 1 and 2. Therefore, a further two options that entails a more radical redesign of the delivery model through shared services are identified for further consideration:
  - Option 3a (Single Provider Model) - this would involve an IJB, third party or social enterprise leading the service on behalf of all IJBs to provide telecare services to all users within the target cohort(s).
  - Option 3b (Dual Provider Model)- similar to option 3a, however users with more complex care needs which require access to a wider package of care would continue to access telecare from their local IJB telecare service.

7.2 Summary Recommendations

A number of recommendations from the work undertaken are set out for consideration and discussion:

- The Scottish Government and COSLA should encourage increased take-up of telecare as evidence demonstrates that at least a third of the population in the over 75+ cohort, and higher in deprived areas, would benefit from a telecare intervention.
- Local Authorities and housing associations should build upon the cost and benefit analysis set out in this report to develop local sustainability cases to ensure continuation of local services and help to articulate purpose of the service to stakeholders.
- Telecare technology is advancing and it is likely that equipment provided today will look very different in the future as new technologies emerge. Research shows that there has been a consistent trend over the past two decades of technology costs decreasing in almost all technology sectors. Currently technology accounts for around 20% of annual operating costs and focus should be on reducing these costs as these new technologies emerge to make the overall case for investment more compelling.
- The TEC programme is funding a number of small scale tests of change to examine opportunities for integrating telecare and telehealth services (this funding does not include facilitating the convergence of the technology). An integrated approach to the delivery of telecare and telehealth services presents opportunities to embed standardisation across a number of areas such as a common technology platform, funding arrangements, charging and service access.
- The charging approach for telecare varies considerably across Scotland ranging from £1 per week (West Lothian) to £8.40 per week (Edinburgh). A number of authorities use a means testing approach to take account of people's circumstances however the majority charge a

set fee irrespective of income due to the admin overhead/cost associated with a means testing approach despite national guidance from COSLA suggesting means testing in all instances. It is a recommended that a review of the charging policy be considered as part of any further work.

- Although call monitoring and response in the context of the wider health social care agenda is outside the scope of this study, it is recommended that a detailed evaluation of the options is undertaken. A number of health and social care services are dependent on a response service and therefore there will be significant opportunity for rationalisation and standardisation when considering telecare response in this wider context.
- Local Authorities should focus on working collaboratively to achieve greater harmonisation and standardisation of policies and processes to drive equity of service across the country. Around 80% of operating costs are people related. Common process and standards should be based on good practice from elsewhere to reduce these costs and overcome some of the barriers to telecare identified during this study. Shared services is one option that could be considered for the provision of telecare services in the future.
- If the above is unsuccessful in reducing costs and driving up more consistent take-up rates and equity of service, more radical service delivery options should be considered further.

Appendix A: Stakeholders Consulted

This appendix provides an overview of the stakeholders consulted as part of this study.

Operational interviews

Area	Name
Aberdeen	Dorothy Askew and Liz Watt
Argyll and Bute	Donna Maclean
East Lothian	Mairi Morris
East Renfrewshire	David Walker and Ann Steele
Edinburgh	Heather Laing
Glasgow	Michael Gillespie
Highland	Mairi Mcivor
Perth and Kinross	Paul Smith
South Ayrshire Health and Social Care Partnership	Tim Eltringham Liz Roy Helen McArthur Kathleen McGuire
Renfrewshire	Lesley Dean and Julie Anderson
West Dunbartonshire	Alex Wrens

Other operational stakeholder engagement:

- Presented at the Digital Health & Care Scotland Conference on 30th November 2016.
- Facilitated a universal telecare working session at the telecare data conference at Strathclyde University on 8th December 2016 attended by a subset of local area telecare leads.
- Facilitated a Workshop with a subset of the local area telecare leads on 25th January 2016.

Local area survey responses received

26 Local Authorities agreed to participate in a survey in order to gather information about existing telecare services and views on a universal approach. Responses were received from the following areas:

- Aberdeen/ Bon Accord Care
- Angus
- Angus
- Argyll & Bute HSCP
- Clackmannanshire Council
- East Renfrewshire HSCP
- Edinburgh City HSCP
- Highland HSCP
- Midlothian HSCP
- Midlothian HSCP
- Perth & Kinross Council
- Renfrewshire HSCP
- Stirling Council
- West Dunbartonshire HSCP

Strategic stakeholder interviews

Name	Role
Alistair Hodgson*	Scottish Government Telecare and Telehealth Policy Lead
Amanda Britain	TEC Housing Lead
Amanda Leithead*	Programme Manager, Technology Enabled Care and Digital Innovation Division
Colin Anderson*	Strategic Lead (project lead for this study)
David Fotheringham	Head of Adult Social Care
David Williams	Chief Officer, Glasgow City
Donna Henderson	Head of European Engagement, Scottish Centre for Telehealth and Telecare
Doreen Watson	TEC Programme Telecare Advisor
George Crooks	Medical Director NHS24
Janette Hughes	University of Strathclyde, Technology & Innovation Centre
John Urquhart	Policy Officer, COSLA
Joyce Gray	Alzheimer Scotland , Deputy Director Development
Laura Friel	North Ayrshire Council (Executive Director – Finance)
Margaret Whoriskey*	Head of Technology Enabled Care and Digital Healthcare Innovation
Martyn Wallace*	Chief Digital Officer
Moira Mackenzie*	Head of Telecare Development, Scottish Centre for Telehealth & Telecare
Pam Gowans	Chief Officer, Moray Health & Social Care Partnership
Paula McLeay	Chief Officer for Health and Social Care, COSLA
Sue Scotland	TEC Programme Telecare Workstream Lead
Tim Eltringham	Chief Officer, South Ayrshire Health and Social Care Partnership
Tony Cain	Association of Local Authority Chief Housing Officers (ALACHO)
Peter McCulloch	Vice Chair of Social Work Scotland's Community Care Standing Committee

* Members of the Project Steering Group.

Interviews with international contacts

Name	Area
Brian O'Connor	European Connected Health Alliance
Simonetta Scalvini	Head of Telemedicine, Brescia (Italy)
Lars Dahle (CEO) / Ken Garner	Dignio (Norwegian telecare provider)

Appendix B: Service Characteristics Evaluation

Target Users

Service Characteristic	Description	Pros	Cons
65+	The universal approach is specifically targeted at anyone aged 65 and over irrespective of need.	• Supports early prevention of complex care needs for some users as it is likely to target a number of users before a need has developed. • Current uptake within the 65-74 cohort is currently relatively low (around 4% nationally) therefore there is scope to significantly increase uptake within this cohort. • Aligns with existing legislation for care of people aged over 65.	• It is likely to be more complex to achieve a controlled roll-out of the service due to the high number of people within this cohort. It may be more appropriate to initially roll out a universal approach to a smaller group and learn lessons that can be applied to larger cohorts thereby increasing the likelihood of success. • The evidence for the 65+ cohort is not as comprehensive in comparison to the 75+ and 85+ cohorts. • The take-up levels may be limited as the majority of people within this cohort may not necessarily perceive that they have a need for telecare (however this could be influenced by how the service is marketed). • The costs would be higher compared to the 75+ and 85+ options as there would be a greater number of users with less demonstrable impact potentially. • By targeting only older people, there is a risk that the public perceive telecare to be an older person's service and discourages younger people from applying.

Service Characteristic	Description	Pros	Cons
75+	The universal approach is specifically targeted at anyone aged 75 and over irrespective of need.	• The evidence presented in section 3 highlights that the greatest need exists within this cohort therefore the greatest benefit is likely to be realised by targeting the 75+ group. • Based on research by Alzheimer's Scotland, 81% of people diagnosed with dementia are aged 75+ therefore this would target the majority of dementia users. • By targeting a smaller cohort (compared to the 65+ cohort) the likelihood for a controlled rolled out is greater and it should also be easier to control costs.	• It is likely to be less effective as a preventative service given those within this cohort are more likely to already have complex care needs compared to younger cohorts. • By targeting only older people, there is a risk that the public perceive telecare to be an older person's service and discourages younger people from applying. • Could be seen as counter to other policy developments in social care which are about extending access for younger people.
85+	The universal approach is specifically targeted at anyone aged 85 and over irrespective of need.	• The evidence presented in section 3 highlights that there is a high level of need within this cohort therefore benefits will be realised. • The service would cost less compared to the 65+ and 75+ options given there would be fewer users.	• The uptake amongst this cohort is already relatively high therefore the scope for significant increases in uptake is limited. • It is likely to be less effective as a preventative service given those within this cohort are more likely to already have complex care needs compared to younger cohorts. • By targeting only older people, there is a risk that the public perceive telecare to be an older person's service and discourages younger people from applying.
Dementia	The universal approach is specifically targeted at anyone who has been diagnosed with dementia irrespective of age.	• The evidence presented in section 3 highlights that a high level of benefit can be realised by this cohort when telecare is successfully adopted by dementia users.	• It is more complex to identify those with a specific need such as dementia compared to targeting by age (unless it becomes a formal part of the post-diagnosis process).

Service Characteristic	Description	Pros	Cons
		• Given this does not apply an age restriction, telecare can be introduced at any stage after dementia diagnosis and therefore there is increased likelihood it will be successfully adopted longer term if introduced early.	
In receipt of an existing benefits allowance	The universal approach is specifically targeted at anyone who is in receipt of an existing benefits allowance irrespective of age or needs. The specific benefit types which would be applicable would need to be determined.	• Potentially an easy way to reach people who could benefit from telecare depending on the benefit types that are applicable.	• May not target those in most need of telecare.
Needs based	The universal service is specifically targeted at those with diagnosed needs irrespective of age. The specific needs which would be applicable and how a need is evidenced would need to be determined.	• Ensures those most in need get equitable access to telecare.	• Complexity of administering the service as it is more complex to identify those with a specific need compared to targeting by age. • It is likely to be difficult to control costs as it would be difficult to predict potential uptake and future demand. • It is likely to be difficult to control the rollout of the service given the uncertainty relating to volume of users. • Not vastly different from what currently exists – focus would be about standardising what we mean by needs and what services / equipment those needs qualify for.

Telecare Package

Service Characteristic	Description	Pros	Cons
Invitation to apply for telecare	Everyone within the target cohort is invited to apply for telecare when they become eligible (e.g. following a birthday or diagnosis of relevant need).	• Helps to build awareness of telecare which could potentially lead to an increase in uptake.	• It is unlikely this would lead to an initial significant number of new users compared to the other options (although over time word of mouth and increased awareness may lead to increased take up rates).
Basic package only	A blanket basic package is provided regardless of need. For example this could comprise of a base unit, pendent and smoke detector. The specific equipment to be provided requires detailed analysis.	• Simplifies and reduces the costs associated to procurement, installation and maintenance of equipment compared to offering more complex packages.	• The Basic package may not be suitable for some users therefore does not align to the concept of personalised care. • No scope to change the package if the user's needs change over time therefore reducing the likelihood of long-term benefits for some users. • Users with more complex needs would need to get support from elsewhere (e.g. via an existing Local Authority service or the private market). • The equipment being provided would need to be regularly reviewed as technology advances.
Basic / Medium / High Package	A package is provided to the user aligned to the complexity of their needs. The Medium and High packages would involve additional and/or more advanced equipment compared to the Basic package. The specific equipment to be provided requires detailed analysis.	• Supports personalised care. • Likely to ensure anticipated benefits are realised as the telecare is targeted towards the user's needs. • There is scope to change the package if the user's needs change therefore there is a greater likelihood that telecare can be of benefit in the longer term for more users.	• It would be more complex and expensive to procure, install and maintain the equipment compared to the 'Basic package only' option. • It could potentially be difficult or higher risk for users to self-assess for the Medium and High packages. • The equipment being provided would need to be regularly reviewed as technology advances.

Service Characteristic	Description	Pros	Cons
Personal Allowance	The user is provided with an allowance that can be to be used towards the cost of telecare equipment and/or telecare services.	• It could encourage the private market to develop their telecare offerings, leading to increased innovation and competition if the allowance could be used to purchase private telecare. • Encourages people to take control of their own care requirements. • Aligns with the principles - and legal framework - of Self Directed Support.	• The design and administration of the service would be highly complex. • Some users may not have the confidence to purchase their own telecare services. There is a risk that users select inappropriate equipment that does not have the required benefit. • Some users within this cohort may find it too overwhelming to make the right choice.

Access

Service Characteristic	Description	Pros	Cons
Self-referral but an assessment is NOT undertaken	Users are able to self-refer for telecare. The commissioning organisation would not undertake any form of assessment pre or post installation of the telecare equipment. The user or user's family / carer would have to determine and monitor need by self-assessment.	• Simplified administration as no assessment is required by the lead commissioner. • Could target users who do not have telecare under current arrangements as they feel the assessment process is intrusive.	• There was a strong feeling amongst telecare leads in the Local Authorities that assessment of need and assessment for telecare is important and should be regularly reviewed. However this does not necessarily mean that a formal social care assessment is always required. • Risk of limited benefits as there would be no review of the user's needs. • It is unclear who would be accountable if the technology has an adverse impact on the user.
Self-referral and an assessment IS undertaken	Users are able to self-refer for telecare. The commissioning organisation would ensure that the user's needs are assessed and any equipment provided is appropriate. This could be in the form of a social care assessment or it could be less formal, for example during	• Assessment of need ensures that the telecare equipment and service is aligned to the user's needs therefore telecare is more likely to be beneficial to the user.	• Depending on the assessment process, some people may perceive this to be intrusive and therefore do not apply for telecare. • There would be a cost associated to the assessment process.

Service Characteristic	Description	Pros	Cons
	installation of the equipment or via a follow up call post installation of the equipment.	• Financial benefit of ensuring costs are aligned to need and therefore this will help ensure benefits are realised.	
Referral required but an assessment is NOT undertaken	The user must be referred into the service e.g. via hospital discharge, GP referral etc. The commissioning organisation would not undertake any form of assessment pre or post installation of the telecare equipment. The user, user's family / carer or organisation that originated the referral would have to determine and monitor need by self-assessment.	• Simplified administration as no assessment is required by the lead commissioner. • Could target users who do not have telecare under current arrangements as they feel the assessment process is intrusive. • Given a referral is required, there is a greater likelihood that the user will benefit from telecare since a professional has identified a need. Therefore benefits are more likely to be realised across the wider health and social care system.	• There was a strong feeling amongst telecare leads in the Local Authorities that assessment of need and assessment for telecare is important and should be regularly reviewed. However this does not necessarily mean that a formal social care assessment is always required. • Responsibility on the referring organisation to ensure suitability of telecare for the user. • Risk of limited benefits as there would be no review of the user's needs. • It is unclear who would be accountable if the technology has an adverse impact on the user. • Relies on the professionals referring knowing about the service and the referrals process.
Referral required and an assessment IS undertaken	The user must be referred into the service e.g. via hospital discharge, GP referral etc. The commissioning organisation would ensure that the user's needs are assessed and any equipment provided is appropriate. This could be in the form of a social care assessment or it could be less formal, for example during installation of the equipment or via a follow up call post installation of the equipment.	• Assessment of need ensures that the telecare equipment and service is aligned to the user's needs therefore telecare is more likely to be beneficial to the user. • Financial benefit of ensuring costs are aligned to need and therefore this will help ensure benefits are realised.	• Depending on the assessment process, some people may perceive this to be intrusive and therefore do not apply for telecare. • There would be a cost associated to the assessment process and relies on the professionals referring knowing about the service and the referrals process. • Doesn't encourage people to take responsibility for their own care needs.

Service Characteristic	Description	Pros	Cons
			• Could be perceived as bureaucratic and could introduce extra delays.
Provided to everyone within the target user group(s)	Everyone within the target cohort is provided with a telecare package without a referral (for example when the user reaches a certain age they are automatically issued with the relevant telecare equipment or enrolled into the service).	• Will result in significant increases to uptake given the service is targeting 100% of the target cohort(s). • Increased uptake may lead to increased benefits across the health and social care system.	• Telecare may be provided to people who do not need telecare or people who it might not be suitable for therefore this would be wasted resource. • May cause offence to those who associate telecare to elderly, frail or disabled conditions. • Could be perceived as being forced upon people. • It would be expensive to fund given it would be targeting 100% of the target cohort(s).

Lead Commissioner

Service Characteristic	Description	Pros	Cons
Local Authority	As happens currently, Local Authorities coordinate and oversee the delivery of the telecare service.	• Potentially the least change effort given Local Authorities already provide telecare services. • Users may feel more comfortable liaising with their Local Authority given it is a recognised body for other social care needs. • Potentially better coordination of care given Local Authorities will have easier access to other parts of the care system.	• Could be more difficult to achieve transformation of the service given the current service model is already Local Authority led. • Could be difficult to achieve a universal approach given consensus amongst all Local Authorities would be needed. • Would be working within the constraints of the public sector, for example this might mean it would be more difficult to innovate compared to a private sector approach.

Service Characteristic	Description	Pros	Cons
			• Increase in uptake would require greater capacity to deliver the service.
Third sector	An organisation from the third sector acts as the lead commissioner. For example this could be a voluntary or community organisation.	• There is potentially more subject matter experts within the third sector (e.g. organisations focussed on helping older people or dementia users). • Possible perception that third sector organisations are more 'in tune' of user's needs therefore new users might feel more comfortable reaching out to a third sector organisation. • Third sector organisations are generally independent of government.	• Potentially a high risk approach given this would require an existing organisation to scale up to run the service. • Would need to find an organisation willing to take on the lead role. • Could potentially lead to an inconsistent service if the Local Authority telecare service continued to run in parallel for other cohorts. • May not be appropriate leading across several cohort groups (for example if the organisation was an old person's charity).
Private sector	A private sector organisation is procured to act as the lead commissioner.	• Potential to offer a cost effective service however further analysis would be required to understand the benefits of this approach. • Potentially more flexibility to be innovative and respond in a timely manner to technology advances compared to public sector options. • More likely to have capacity to deliver at scale (or recruit to achieve capacity).	• Potential misalignment of culture / values as the organisation would be primarily driven by profits. • Procurement of the provider could be complex and expensive. • Contract management complexities. • May not have good links to other care providers within the wider health and social care sector therefore more difficult to ensure the user has a holistic care package. • Could potentially lead to an inconsistent service if the Local Authority telecare service continued to run in parallel for other cohorts. • Few private sector organisations are currently offering a fully end to end

Service Characteristic	Description	Pros	Cons
			manged service (equipment, monitoring and response).
Health and Social Care Partnership (H&SCP)	Health and Social Care Partnerships coordinate and oversee the delivery of the telecare service.	• Users may feel more comfortable liaising with an H&SCP given it is a recognised body for other social care needs. • Potentially better coordination of care given H&SCPs will have easier access to other parts of the care system.	• Could be more difficult to achieve transformation of the service given the similarity with the current service model. • Could be difficult to achieve a universal approach given consensus amongst all H&SCPs would be needed. • Would be working within the constraints of the public sector, for example this might mean it would be more difficult to innovate compared to a private sector approach. • Increase in uptake would require greater capacity to deliver the service.
Housing provider	A housing provider is selected to act as the lead commissioner.	• Housing providers are already experienced in providing telecare services therefore it is a proven approach at a local level.	• High risk given it would require an existing organisation to scale up to run the service. • Would need to find an organisation willing to take on the lead role. • Could potentially lead to an inconsistent service if the Local Authority telecare service continued to run in parallel for other cohorts. • May not be appropriate serving across several cohort groups (for example if the organisation was focussed on providing housing to older people).

Response Service

Anecdotal evidence suggests that the speed and appropriateness of the response most defines the quality and effectiveness of the service, for users and for care professionals. The question of how to rationalise and improve arrangements for handling calls/alerts and responding to emergency

situations has been a longstanding priority for the Scotland Government and was identified as a priority issue in National Telehealth & Telecare Delivery Plan.

A recent study by Farrpoint highlighted that although call monitoring is very fragmented across Scotland with 22 Alarm Receiving Centres (ARCs) there is significant opportunity for rationalisation which could lead to a universal approach for call monitoring services. NHS 24 could also be considered as an option to realise economies of scale and equity of service.

However given the geography of Scotland, a standard approach to 'on the ground' response is unlikely to be cost effective, timely or practical due to the maturity of the infrastructure in some areas and therefore alternative approaches must be considered to achieve equitable access. For example this could involve close collaborative working between a range of stakeholders from the emergency services, third sector, independent sector, relatives, neighbours and other unpaid carers to provide local 'on the ground' response services in areas with poor coverage. There are also private companies that provide a responder service, which could also be utilised. However the number of stakeholders involved illustrates how complex the provision and management of a prompt and adequate response can be and highlights the importance for a response service based on protocols and standards if a universal approach is to be considered.

Although call monitoring and response in the context of the wider health social care agenda is outside the scope of this study, it is recommended that a detailed evaluation of the options is undertaken. A number of health and social care services are dependent on a response service and therefore there will be significant opportunity for rationalisation and standardisation when considering telecare response in this wider context.

Charging Approach

Service Characteristic	Description	Pros	Cons
Free	Telecare is free to all within the target cohort(s) regardless of income.	• Potential take-up and subsequent benefits are likely to be high as there is scope to offer telecare free to all within the target cohort(s) who may benefit from it. • By investing in telecare, organisations across the health and social care sector will benefit from the resulting savings. • Less administration compared to any of the charging options as all users are under the same system.	• Telecare for wealthier households would be free, despite many potentially being able to afford it without public support. • A universal approach would not really be free since the government would need to generate funds to support the service. Hence, it could lead to an increase in taxes or cuts to other services. • It would be difficult politically to introduce a charge at a later date if telecare was initially offered free. This could leave the government exposed to risk if financial circumstances change in the future.
Charge	A user charge is applied for telecare regardless of the user's ability to pay. The charge could be linked to the complexity of equipment or service provided or it	• Charging provides a revenue stream that subsidies both the ongoing cost of telecare services, plus the up-front	• Depending on how charges are set, charges may deter some users and impact the potential uptake of a universal approach.

Service Characteristic	Description	Pros	Cons
	could be a set charge irrespective of the user's needs.	investment costs associated with its use.	• There would be a cost associated to collecting the charge and debt recovery which would reduce the income received from charging.
Means tested – via dedicated telecare assessment	A test specific to telecare involving the checking of the user's income to determine whether the user qualifies for free telecare or whether they must make a financial contribution towards the equipment and/or service.	• Charging provides a revenue stream that subsidies both the ongoing cost of telecare services, plus the up-front investment costs associated with its use. • Means testing will ensure that those who really need telecare will be able to receive it irrespective of their financial circumstances.	• Means testing may discourage those in most need. This is particularly likely to happen with older people, who are often too proud to reveal their financial circumstances. • Depending on the approach, means testing can involve complicated application forms which tends to affect the elderly, poor and the illiterate (i.e. particularly vulnerable groups in society who will benefit from telecare). • Means testing must be administered and policed to detect attempts at fraud, which can be very expensive. A banded system requires a separate calculation to be made for every user, and for this to be reviewed every time their financial circumstances change. • There would be a cost associated to collecting the charge and debt recovery which would reduce the income received from charging.
Means tested – via existing processes	Adapt an existing mean-testing approach already applied elsewhere in the public sector to include telecare.	• Charging provides a revenue stream that subsidies both the ongoing cost of telecare services, plus the up-front investment costs associated with its use. • Depending on the approach used, it could potentially be easier and/or more effective to utilise an already established process for means testing. • Depending on the approach used, mean testing could take into	• The approach could potentially be complex and costly to set up / modify existing processes. • Means testing typically occurs at Local Authority level so it may be difficult to identify an appropriate universal means testing approach that has already been established to 'piggy back' onto (one possibility could be NHS dental means testing).

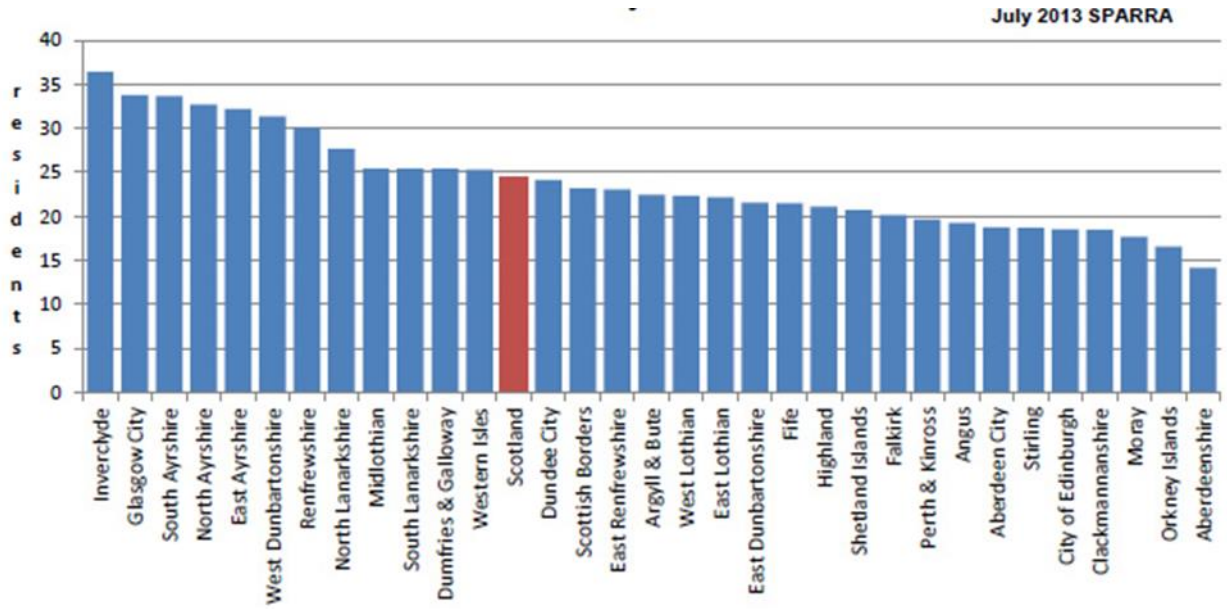
Service Characteristic	Description	Pros	Cons
		consideration other social care costs incurred by the user to ensure overall affordability of telecare to the user.	
Telecare contribution comes from an existing allowance	A charge for telecare is deducted from an existing benefits allowance(s) that the user is in receipt of.	• Charging provides a revenue stream that subsidies both the ongoing cost of telecare services, plus the up-front investment costs associated with its use. • Provides users with choice / flexibility on how to best meet their care needs.	• The administration could potentially be complex. • Users may choose to fund telecare at the expense of another important service. • May discourage take-up of the service. • Unclear how users who are not in receipt of benefits allowances would access telecare.

Appendix C: Uptake Analysis

Scottish Patients at Risk of Readmission and Admission is a risk prediction tool developed by ISD which predicts an individual's risk of being admitted to hospital as an emergency inpatient within the next year. Scores are calculated for approximately 3.5 million patients and details of patients whose score indicates that they may be at increased risk are distributed to NHS Boards, CHPs and other health agencies.

SPARRA uses a statistical model called logistic regression to calculate a risk score for the Scottish population. The risk score is a number ranging from 1 to 99 that indicates the % chance that a patient will undergo an emergency admission in the next 12 months. The majority of the population (73-80%) have a SPARRA score of 10% or less.

This chart below shows the ratio of patients with what is considered a high risk of admission (>40% score).



To determine a target uptake for each Local Authority, East Renfrewshire was identified by the project steering group as an exemplar service in recognition of recent service developments (albeit it was recognised that there is still scope to further improve).

Recent service developments within East Renfrewshire include:

- Effective response service – current service provides 24/7 emergency response to telecare alerts and provision of urgent personal care to support people with complex needs. Delivered via a 20 strong Responder team who attend over 1000 call outs per month.
- Installation of equipment is an in-house service.
- Operates to TSA Accreditation Service standards – the authority is one of the Partnerships identified by TSA to implement the new 2017 Service Standards
- Significantly increased the number of services users from (1570 in 2012) to current level of 2600. The service is available to all client groups including learning disability, older adults, physical disability and children and families.
- Extensive work with Scottish Fire and Rescue Service – linked smoke alarm installed to all service users (links into the Building Safer Communities work and the Prevention Agenda)
- One of 7 partnerships involved in the European Smartcare and United 4 Health programmes.

A target uptake was calculated for each Local Authority based on each authority's SPARRA needs index score relative to East Renfrewshire's SPARRA needs index score. The SPARRA needs index used to calculate optimum targets is show in Table 17 below.

Local Authority	SPARRA Patients with a Risk Score >=40% per Population	Index Figure
Aberdeen City	19	0.78
Aberdeenshire	14	0.57
Angus	19.5	0.80
Argyll & Bute	22.5	0.92
Clackmannanshire	19	0.78
Dumfries & Galloway	25	1.02
Dundee City	24	0.98
East Ayrshire	32	1.31
East Dunbartonshire	22	0.90
East Lothian	22.5	0.92
East Renfrewshire	23	0.94
Edinburgh, City of	19	0.78
Eilean Siar	25	1.02
Falkirk	20	0.82
Fife	22	0.90
Glasgow City	34	1.39
Highland	21	0.86
Inverclyde	36	1.47
Midlothian	25	1.02
Moray	18	0.73
North Ayrshire	33	1.35
North Lanarkshire	28	1.14
Orkney Islands	16	0.65
Perth & Kinross	19.75	0.81
Renfrewshire	30	1.22
Scottish Borders	23	0.94
Shetland Islands	20.5	0.84
South Ayrshire	34	1.39
South Lanarkshire	25	1.02
Stirling	19	0.78
West Dunbartonshire	31	1.27
West Lothian	22	0.90
Scotland	24.5	1.00

Table 17 Local Authority SPARRA Needs Index Scores:

Table 18 below shows the increase in telecare users by Local Authority when the SPARRA needs index is applied to current uptake levels with a further 10% and 20% uplift applied.

	Scenario 1 SPARRA + 10%		Scenario 2 SPARRA + 20%	
	75+ Only	75+ and Dementia	75+ Only	75+ and Dementia
Local Area	Increase in Telecare Users	Increase in Telecare Users	Increase in Telecare Users	Increase in Telecare Users
Aberdeen City	2,877	3,184	4,530	4,837
Aberdeenshire	2,911	3,351	5,190	5,630
Angus	1,823	2,046	3,143	3,365
Argyll & Bute	1,678	1,856	2,747	2,926
Clackmannanshire	716	805	1,178	1,268
Dumfries & Galloway	3,999	4,303	5,809	6,112
Dundee City	1,251	1,458	2,497	2,704
East Ayrshire	1,886	2,095	3,012	3,221
East Dunbartonshire	2,893	3,083	4,145	4,335
East Lothian	1,297	1,473	2,306	2,481
East Renfrewshire	1,138	1,289	2,084	2,235
Edinburgh, City of	5,368	6,036	9,110	9,778
Eilean Siar	402	456	727	781
Falkirk	1,806	2,064	3,197	3,454
Fife	4,547	5,185	8,106	8,744
Glasgow City	10,174	10,917	14,024	14,767
Highland	4,810	5,252	7,278	7,720
Inverclyde	1,858	1,992	2,635	2,769
Midlothian	1,252	1,401	2,022	2,171
Moray	1,314	1,483	2,306	2,475
North Ayrshire	3,155	3,405	4,583	4,833
North Lanarkshire	3,394	3,913	6,003	6,523
Orkney Islands	310	351	557	599
Perth & Kinross	2,368	2,652	4,084	4,369
Renfrewshire	3,751	4,033	5,323	5,605
Scottish Borders	2,221	2,452	3,544	3,775
Shetland Islands	289	330	503	544
South Ayrshire	4,356	4,583	5,715	5,942
South Lanarkshire	4,080	4,613	6,961	7,494
Stirling	1,121	1,270	1,989	2,138
West Dunbartonshire	1,023	1,168	1,754	1,900
West Lothian	2,085	2,354	3,444	3,713
Totals	**82,153**	**90,853**	**130,506**	**139,208**

Table 18: Local Authority increase in telecare users based on SPARRA needs index

Appendix D: Cost and Benefits Sources

Uptake, Costs and Benefits Sources

Table 19 below, details the sources of research used as input to estimate uptake, costs and benefits.

Category	Title	Author	Year	Source
Uptake	National Records of Scotland - Population Estimates	National Records of Scotland	2015	https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates
Uptake	Social Care Statistics, November 2016 update	Scottish Government	2016	http://www.gov.scot/Topics/Statistics/Browse/Health/Data/HomeCare
Uptake	Alzheimer Statistics	Alzheimer Scotland	2016	http://www.alzscot.org/campaigning/statistics
Uptake	Adult Health & Social Care Integration	Scottish Government	2016	http://www.gov.scot/Topics/Health/Policy/Adult-Health-SocialCare-Integration/Dementia
Uptake	Dementia Statistics	Alzheimer Scotland	2013	https://www.st-andrews.ac.uk/media/human-resources/equality-and-diversity/carers/Statistics%20Dementia%20Scotland%202013.pdf
Uptake	Scottish Patients at Risk of Admission and Re-admission (SPARRA)	ISD Scotland	2016	http://www.isdscotland.org/Health-Topics/Health-and-Social-Community-Care/SPARRA/Data-Visualisation/
Costs	PA Diagnostic report for Glasgow: "Transforming Glasgow's Care Offer by Mainstreaming Technology 2016"	PA Consulting	2016	https://www.glasgow.gov.uk/CHttpHandler.ashx?id=35279&p=0
Costs	Telecare Dementia Evaluation of Renfrewshire	Scottish Centre for Telehealth & Telecare	2013	http://www.jitscotland.org.uk/wp-content/uploads/2014/10/Telecare-Dementia-Evaluation-of-Renfrewshire-Project-April-2013.pdf
Costs	Integrated Care for Patients and Populations	The Kings Fund	2012	https://www.kingsfund.org.uk/publications/integrated-care-patients-and-populations-improving-outcomes-working-together
Costs	Transforming Glasgow's Care Offer By Mainstreaming Technology	Glasgow City IJB Assistive Technology Programme	2016	https://www.glasgow.gov.uk/CHttpHandler.ashx?id=35279&p=0
Costs	Response Service Costs	Local Authority Provided - Renfrewshire	2016	N/A
Benefits	Scotland's TEC Development Programme One Year On: A Scoping Exercise	Bob Hudson	2016	http://www.ehealth.nhs.scot/wp-content/uploads/sites/7/2016/11/TEC-Year-1-Review.pdf
Benefits	The Telecare Development Programme in Scotland 2006-11	Newhaven Research	2011	http://www.jitscotland.org.uk/resource/telecare-development-programme-final-report/
Benefits	Telecare Dementia Evaluation of Renfrewshire	Scottish Centre for Telehealth & Telecare	2013	http://www.jitscotland.org.uk/wp-content/uploads/2014/10/Telecare-Dementia-Evaluation-of-Renfrewshire-Project-April-2013.pdf
Benefits	Telecare and telehealth – a game changer for health and social care	Deloitte Centre for Health Solutions	2012	https://www2.deloitte.com/uk/en/pages/life-sciences-and-healthcare/articles/telecare-and-telehealth.html
Benefits	Evidencing the cross sector benefits of telecare	Havering Council / Tunstall	2015	http://www.tunstall.com/media/1141/lb-havering-evidencing-cross-sector-benefits-of-telecare.pdf
Benefits	BMJ Telehealth Research	British Medical Journal	2013	http://www.bmj.com/content/353/bmj.i2647
Benefits	Unit Costs of Health and Social Care 2016	Personal Social Services Research Unit	2016	http://www.pssru.ac.uk/project-pages/unit-costs/2016/
Benefits	An Assessment of the Development of Telecare in Scotland 2005-2010	Joint Improvement Team / Scottish Government	2010	http://www.gov.scot/Resource/Doc/328586/0106225.pdf
Benefits	Itemised Costings	CCPS Scotland	2016	http://www.ccpscotland.org/hot-topics/hourly-rates-wages/
Tech Trends	Long-term price trends for electronic goods and services	US Bureau of Labor Statistics	2015	https://www.bls.gov/opub/ted/2015/long-term-price-trends-for-computers-tvs-and-related-items.htm

Table 19: Sources of research used as input to estimate uptake, costs and benefits

A summary of the cost sources and calculations (where applicable) are summarised below.

Response Service

Source	Description	Per user cost
PA Diagnostic report for Glasgow: *"Transforming Glasgow's Care Offer by Mainstreaming Technology 2016"*	Average cost calculated based on response costs detailed in the report.	£89
	Total on the ground response service cost	£89

Access Costs

Source	Description	Per user cost
Data provided by West Dunbartonshire	Average on boarding needs assessment costs	£100
	Total Access Cost	£100

Call handling / monitoring

Source	Description	Per user cost
Kings Fund data from Nottingham	Call monitoring average costs	£150
PA Diagnostic report for Glasgow: *"Transforming Glasgow's Care Offer by Mainstreaming Technology 2016"*	Average cost calculated based on call monitoring costs detailed within the report	£157
Private research - Centragroup UK	Call monitoring user costs	£214
Data provided by East Renfrewshire	In-house dedicated responder service (estimated cost)	£100
	Average Call Handling / Monitoring Cost	£155

Equipment (Basic package)

Source	Line Description	Per user cost
Scotland Excel Framework	Supplier 1 - Vi with Pendant	£95
Scotland Excel Framework	Supplier 1 - Smoke Alarm	£40
	Total Tunstall cost	*£135*
Scotland Excel Framework	Supplier 2 - Reach with pendant	£98
Scotland Excel Framework	Supplier 2 - Smoke	£45
	Total Tynetac cost	*£144*
	Average Equipment (Basic Package) Cost	£139

Installation and Removal

Source	Line Description	Per user cost
Private - Telecare Choice UK	Service set-up costs	£39
Private - Centragroup UK	Installation of equipment	£66
Kings Fund data from Nottingham	Telecare equipment installation and service cost	£450
	Average Installation and Removal Cost	£185

Equipment Maintenance

Source	Line Description	Per user cost
Telecare Leads workshop Jan 2017	Equipment maintenance estimate	£100
	Installation and Removal Cost	£100

Health and Social Care Costs

Unit Type	Cost per unit	Source
Care Home Bed Day*	£89	Scotland Excel Framework
NHS Hospital Bed Day	£382	Personal Social Services Research Unit (PSSRU) 2016
Sleep Over Night	£91	Personal Social Services Research Unit (PSSRU) 2016
Ambulance Callout	£98	Personal Social Services Research Unit (PSSRU) 2016
Home Care Visit	£10	Newhaven Research 2011
GP Visit	£49	Personal Social Services Research Unit (PSSRU) 2016

*The Care Home Bed day cost is comprised of an average from the following:

- National care home contract - weekly rates for 2017/18, as of April are:
  Residential care – with nursing : £667.09
  Residential care – without nursing : £574.42

A summary of the benefits sources and calculations (where applicable) are summarised below.

Benefit Item: **Benefits - Care Home**

Source	Benefit Description	Benefit / Reduction Per Year Per User	Benefit Type	Benefit Limitation
Newhaven Research	Care Home Bed Days (545,943 less care home bed days out of 44000 users over 5 years)	2.5	Bed Days	Outcomes based upon what local partnerships believe would otherwise have happened to the user if TDP assistance was not available i.e. most likely to have been admitted to a care home.
Newhaven Research	Home Check Visits - (443,969 less home check visits to patients out of 44000 users over 5 years)	2.0	Visits	
Telecare Dementia evaluation of Renfrewshire	Reduced total bed days (63 average per person - 17,716 bed days	12.6	Bed Days	Partnerships use professional judgement to assess what 'would' happen to users if not receiving telecare i.e. user would most likely have been admitted to care home etc. Range of bespoke packages of user groups

Benefit Item: **Benefits - Reduced Hospital Admissions**

Source	Benefit Description	Benefit / Reduction Per Year Per User	Benefit Type	Benefit Limitation
Newhaven Research	Avoided unplanned admissions - bed day savings (82106 bed days avoided out of 44000 users over 5 year period)	0.4	Bed Days	Outcomes based upon what local partnerships believe would otherwise have happened to the user if TDP assistance was not available. i.e. most likely to have been admitted to care home
Telehealth Programme	Avoided unplanned admissions - bed day savings - 4.87 with Telecare, 5.68 without	0.8	Bed Days	
Telecare Dementia Evaluation of Renfrewshire	Avoided unplanned admissions bed day savings - length of stay 11.9 days on average	0.8	Bed Days	

Benefit Item: **Benefits - Hospital Discharge Speed**

Source	Benefit Description	Benefit / Reduction Per Year Per User	Benefit Type	Benefit Limitation
Newhaven Research	27,292 hospital bed days saved to reduction in delayed discharge - reduction of 0.62 bed days due to delayed discharge per user of telecare over 5 year period	0.1	Bed Days	Outcomes based upon what local partnerships believe would otherwise have happened to the user if TDP assistance was not available. i.e. most likely to have been admitted to care home
Telecare Dementia Evaluation of Renfrewshire	Reduction in delayed discharges - 377 out of the 1045 users over a 5 year period	0.1	Avoided Delay	
Telecare Dementia evaluation of Renfrewshire	Reduction in delayed discharges Bed Day Saving - mean saving of 10.6 days per delay, 377 delays from 1045 users over a 5 year period	0.8	Bed Days	

Benefit Item: **Benefits - Reduced Overnight Stays**

Source	Benefit Description	Benefit / Reduction Per Year Per User	Benefit Type	Benefit Limitation
Newhaven Research	48181 nights of sleepover care saved, from 44000 users over a 5 year period	0.2	Sleepover Nights	Outcomes based upon what local partnerships believe would otherwise have happened to the user if TDP assistance was not available. i.e. most likely to have been admitted to care home
Telecare Dementia Evaluation of Renfrewshire	Reduced sleepover nights by 7,133, out of 1045 users over a 5 year period	1.4	Sleepover Nights	

Benefit Item: **GP Contact**

Source	Benefit Description	Benefit / Reduction Per Year Per User	Benefit Type	Benefit Limitation
BMJ - Telehealth Research	Significantly higher GP contacts in intervention group than control group, incidence rate ration 1.18,	-0.2	Negative	Single study providing evidence

Benefit Item: **Ambulance Call Outs**

Source	Benefit Description	Benefit / Reduction Per Year Per User	Benefit Type	Benefit Limitation
Stockton	Reduction in Ambulance Call Outs from 26 - 3 out of 19 residents in a car home	1.2	Ambulance Call Outs	Small study, only 19 residents of a care home involved

Benefit Item: **Home Check Visits**

Source	Benefit Description	Benefit / Reduction Per Year Per User	Benefit Type	Benefit Limitation
Newhaven Research	443,969 home check visits saved for 44000 users over 5 year period	2.0	Home Check Visits	Outcomes based upon what local partnerships believe would otherwise have happened to the user if TDP assistance was not available. i.e. most likely to have been admitted to care home

References:

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[1] National Action Plan for Technology Enabled Care: http://www.gov.scot/Resource/0050/00507649.pdf
[2] National Action Plan for Technology Enabled Care: http://www.gov.scot/Resource/0050/00507649.pdf
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